NASA/CR—2017-219509 ARL–AQ6761

9- by 15-Foot Low-Speed Wind Tunnel Acoustic Free Field Evaluation

Part 1: Qualification Report Summary

Part 2: Anechoic Environment Characterization Field Test Report

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August 2017

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9- by 15-Foot Low-Speed Wind Tunnel Acoustic Free Field Evaluation

Part 1: Qualification Report Summary

(Per ISO 26101−Qualification methods for Free Field Test Environments)

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1.0 Introduction

This report summarizes the results of tests conducted on the acoustically treated 9- by 15-ft Low Speed Wind Tunnel (LSWT) at the NASA Glenn Research Center in Cleveland, Ohio, in July of 2016. The tests were conducted under contract to JGS Consulting and were supervised by Jeff G. Schmitt, P.E. Data collection and analysis was conducted by Brian Stahnke of ETS-Lindgren in Austin, Texas. The project leader at NASA Glenn Research Center was David Stephens.

The tests reported herein were conducted in accordance with the recently adopted international standard ISO 26101-2012 on Qualification of Free Field Test Environments. This method involves moving a microphone relative to a source and comparing the sound pressure level versus distance measurements with theoretical inverse square law spreading. ISO 26101 outlines the details of the measurement techniques and analysis.

There are no fixed criteria in ISO 26101 that are applicable to the measurement application in the LSWT, only an outline of how the test is to be conducted and the results are to be analyzed. The method is intended to be a general method for qualification of free field environments that other standards and specifications can refer to with appropriate criteria. However, the method does have an Annex with default criteria that can be used for evaluation when a criterion for a specific measurement application does not exist.

It is noted that ISO 26101 was generally intended to be used in “anechoic chambers” that are a space enclosed and have sound absorbing materials on all six surfaces of the space. The 9- by 15-ft wind tunnel does not fit the typical boundary geometry or acoustic treatments as an anechoic chamber. In addition, the measurements conducted in the wind tunnel do not fit the typical measurement layout geometry in an anechoic chamber environment. Therefore, the methods outlined in ISO 26101 were adapted to best characterize the wind tunnel section in the manner in which it is utilized.

It is also noted that the 9- by 15-ft wind tunnel is part of a huge facility consisting of several buildings connected by large metal ducts with many doors, damper, pumps and mechanical systems that are part of the facility. This makes for numerous background noise events in the wind tunnel section being tested, although NASA Glenn staffs were quite cooperative in turning off as many systems as possible and minimizing activities in the area during the testing. In spite of this, there were a number of spurious acoustic events that could not be controlled. Since the Omni-directional sources required for the ISO 26101 qualification measurements cannot provide a lot of acoustic power and the space they are radiating into is huge, it was sometimes difficult to maintain sufficient signal to noise ratio to operate the 10 to 30 minute long traverse tests without spurious acoustic events effecting the measurements. These background noise related issues were particularly problematic at the very low frequencies at which chamber qualification was attempted (< 315 Hz) and for test signals that were broadband noise as opposed

to discrete frequencies. As a result the data below 315 Hz could not be reasonably analyzed and all the data that was analyzed for distance compliance and deviations from Inverse Square Law is based on discrete frequency test signals.

1.1 Test Overview

Most of the tests were conducted by ETS-Lindgren using a testing system that has been custom designed to implement the ISO 26101 test method. The testing system generally consists of a low acoustic profile mechanical fixture that allows a microphone to be moved along a track by a stepper motor. A series of three Omni-directional speaker sources that are operated with either discrete frequency tone sequences or broadband noise as the microphone is moved away from the source to fixed positions and the Leq sound pressure level versus position are measured. The ETS-Lindgren test report with the details of the equipment used for the test is attached.

One of the key requirements of the ISO 26101 test method is the use of sources that have been pre-qualified to have Omni-directional radiation performance, within defined limits, over the frequency range that each source is used. In general, three sources are required to cover the entire audio frequency range. For this study, due to background noise issues at low frequencies and the frequency range over which measurements are usually conducted, most of the measurements were conducted with the mid-frequency and high frequency sources. I have reviewed the qualification data on these sources, which is well documented in technical articles published by ETS-Lindgren and confirmed that all sources used during the measurement program met the omni-directional radiation requirements.

I have also reviewed sound pressure level versus distance data obtained with the ETS-Lindgren testing system in an anechoic test environment that is known to follow inverse square law performance at distances similar to the measurements conducted herein. This allows me to determine that the system resolution is sufficient to detect deviations from ISQL that are well below those observed in this test program. A set of sample traverses from the ETS-Lindgren hemi-anechoic chamber in Austin, Texas, which qualifies to ISO 3745 over the frequency range being studied herein, will be provided along with this report for your reference.

In addition to the ISO 26101 traverse measurements using the ETS-Lindgren test system, a series of sound pressure level versus distance measurements were conducted using the ETS-Lindgren Omni-directional sources located at the test article position and the LSWT moving microphone system. The LSWT microphone system that moves three microphones along a linear path that is parallel to the wind tunnel flow direction along one wall of the tunnel. The LSWT microphone traversing system was used for acquisition of sound pressure level versus distance data using the ETS-Lindgren Omni-directional sources at the test article location. It is noted that this is not a "traditional" traversing path for chamber qualification, as the microphone is not moving directly away from the source, but rather on a line passing by the source. This makes the data more difficult to analyze using the traditional analysis in ISO 26101, although some attempts were made to distance normalize the data and look for spatial patterns.

However, due to the low output power of the Omni-directional sources, the large space and the noise created by the microphone drive screw and other mechanical clicks, pops and squeals, this level versus distance data contains numerous extraneous noise events that makes it difficult to determine what parts of the spatial patterns that were observed on this traverse paths are due to acoustic reflections, spurious noise issues or loss of signal to noise ratio towards the end of the traverse where the microphone directivity reduced its sensitivity relative to these events. The sound pressure level versus distance associated with these three microphones moving continuously along this traverse path at rates of 1 in./sec and 0.5 in./sec were measured on both the NASA and ETS data acquisition systems. The data is provided in association with this report but it is not meaningful to analyze it in accordance with the calculation methods outlined

in ISO 26101. However, the spatial patterns in this data may be compared with the traverse data that was taken in the more traditional manner to help discern what part of these spatial pattern may be due to the sound absorptive properties of the acoustic lining material and what part is related to other factors, including the spurious events and drive related noise.

As the data obtained from the LSWT is not particularly useful for determining the free field properties of the chamber, the remainder of this report will focus on the sound pressure level versus data obtained from the ETS-Lindgren traversing system using the mid and high frequency Omni-directional sources radiating discrete frequencies at each 1/3 octave band center when analyzed in accordance with ISO 26101.

1.2 Data Analysis

The sound pressure level versus distance data obtained using the ETS-Lindgren traversing system and sources was analyzed as outlined in ISO 26101 for deviation from theoretical Inverse Square Law (ISQL). The ISQL is a basic theoretical relationship between the sound pressure levels versus distance from an Omni-directional source radiating in a reflection free (i.e. anechoic or hemi-anechoic) environment. The relationship states that the sound pressure level will decay in a manner that is inversely proportional to the square of the distance away from the source, or at a rate of 6 dB/doubling of distance from the source.

The most meaningful traverses are the paths going directly towards the acoustic treatment on the north wall of the test cell and the path upwards into the dihedrals corner of the north wall. In addition traverse paths into the upper NE and NW trihedral corners of LSWT and one traverse path were conducted directly down the wind tunnel, providing a total of five traverse paths for analysis. Additional information on the testing conducted and data analysis can be found in ETS-Lindgren report ARL-AQ6761 Revision 1.1.

The sound pressure level versus distance data was analyzed in two ways:

1. As outlined in ISO 26101 in which the data provides a radial distance in which the deviations from ISQL fall within a specified criteria. All measurement within the volume defined by this radial distance can be expected to have deviations from what would be measured in a perfectly free field that are less than the criteria values and are generally considered to be of “precision grade”. This analysis provides not only a qualified distance but allows determination of the apparent sound power output of the source that can be used for analysis of data outside of the qualified volume.
2. One the analysis per ISO 26101 was completed, and a qualified distance and source sound power was determined, the data beyond the qualified distance and out to the end of each traverse path was analyzed to determine the maximum deviations from ISQL that can be expected at the approximate measurement distances used by the LWST traversing system

1.2.1 Analysis per ISO 26101

In this case the data is fit into a mathematical model for the sound pressure level versus distance and a radial distance is determined inside of which all of the data fits the model within a specified criterion using a Least Square Errors fitting method. As the LSWT is designed to simulate a full anechoic chamber, the initial data analysis used the default criteria in ISO 26101 for anechoic chambers. However, it was determined that the sound pressure level versus distance data did not fit well into a model using such low tolerances and the radial distances and source sound powers derived were therefore not valid.

Therefore a second data fitting exercise was conducted, this time using the criteria for a hemi-anechoic chamber, which allows somewhat larger deviations from ISQL. After some work fitting the data

into a model with the hemi-anechoic limits, it was determined that if the suggested default criteria in ISO 26101 were increased just slightly in some bands, the data could be made to fit into the model. The result was the determination of a region within a 1.15 m radial distance that fit into that model within the deviation criteria. Details of the deviation criteria used for this data fitting can be found in the ETS-Lindgren test report.

1.2.2 Analysis of Full Traverse Path Data

After the sound pressure level versus distance data was fit into the ISQL model and the compliant distance and source sound power were determined, the data was then reanalyzed using this source strength and the sound pressure level versus distance data for the full traverse path. Some traverse paths were 2.5 to 3.0 m in length and attempted to terminate as closely as possible to the traverse path used for LSWT measurements. This secondary analysis yields a deviation from ISQL versus distance. The magnitude of these deviations can be considered a first order estimate of the uncertainty associated with a sound pressure level measurement made in this test cell. The maximum value of these deviations versus distance for all five traverse paths analyzed are provided in the ETS-Lindgren report and summarized below

1.3 Summary of Results

A general summary of the results of the analysis outlined above is as follows:

1. The LSWT has free field properties that are approximately equal to the criteria for a precision grade hemi-anechoic chamber as defined in Annex A of ISO 26101 out to a radial distance of 1.15 m.
2. The deviations from the expected sound pressure levels based on an ISQL analysis for measurements made directly into the north wall of the LWST, which is the surface that is most representative of the acoustic properties of the tunnel lining and least influenced by other physical and geometrical anomalies in the tunnel were generally:
   a. Within ± 2 dB at most frequencies from 160 to 1,600 Hz and ± 4 dB from 1,600 Hz to 20 kHz.
   b. However, some frequencies showed deviations exceeding ± 4 dB at mid frequencies and as much as ± 6dB at some of the high frequencies.
3. The deviations from expected sound pressure levels based on ISQL analysis for measurements made into the upper trihedral traverse paths, which are the paths that are the least representative of the acoustic lining and most effected by physical and geometrical anomalies in the wind tunnel were generally:
   a. Within ± 3 dB at many frequencies from 160 to 1,600 Hz and ± 4 dB from 1,600 Hz to 20 kHz.
   b. However, some frequencies showed deviations exceeding 6 to 10 dB at the mid frequencies and 4 to 6 dB at the high frequencies.

All of the data obtained during the test program, including the data not analyzed or reported on herein, has been provided for evaluation by the LSWT staff.

1.4 Additional Observations and Recommendations

In addition to the data reported in the ETS-Lindgren test report and the summary provided above, I will provide a few additional observations and recommendations based on some of the questions that were raised and discussion that occurred during the qualification measurements.

1.4.1 Effect of Structural Beams on Acoustic Performance

There was some concern expressed over the potential effect of the reduced acoustic lining thickness that covers the structural support beams in the tunnel and some mention of possibly moving those beams as a part of the tunnel upgrade project.

Although the data was not reported as a part of the ETS-Lindgren ISO 26101 test report, an additional traverse path that was parallel to the North wall horizontal traverse path and aimed directly into the beam was conducted. Examination of that data and comparison to the traverse data that was obtained into the full depth of treatment tunnel lining showed no significant difference between the deviations from both paths.

It is my opinion that the reason we see no significant effect of the beams when traversing directly at them is that at the higher frequencies where the wavelengths are short, the approximately 2-in. depth of treatment over the beam is sufficient to have very high sound absorption. At the lower frequencies, where the wavelengths are longer, the wall treatment is seen more in terms of its overall bulk properties, as opposed to its local properties where the traverse is pointed.

Therefore, if the motivation for moving the structural beams was to allow a full depth of treatment along the entire tunnel wall, the improved acoustic performance achieved from this might be minimal. However, if the motivation for moving the structural beams is to increase the overall inside dimensions of the tunnel and move the entire tunnel lining surface farther away from the traversing microphone, that might have more effect on the potential measurement uncertainties on the LSWT traversing microphones. When one examines the theoretical relationship that defines the deviations from ISQL, it becomes apparent that distances is even more important than the acoustic properties of the chamber lining, as the deviations will go as distance squared but only linearly with respect to the sound absorption of the chamber lining.

1.4.2 Recommendations for Tunnel Upgrade

One thing that is apparent when one looks at the deviations from ISQL directly into the north wall and compares them to the deviations obtained from the trihedral paths that traverse toward the ends of the treated tunnel section is that the change in acoustic properties at the ends of the tunnels definitely increases the potential sound pressure level measurement uncertainties. One thing that could be considered as part of the tunnel upgrade project would be to extend the acoustic treatments beyond the end of the tunnel measurement sections. Given that most of the testing is conducted at mid and high frequencies and scaled, the depth of treatments beyond the ends of the measurement section would not have to be large. Probably 2- to 4-in. of treatment extended another tunnel length beyond the end would yield greatly improved results near the end of the linear traverse path.

1.4.3 Tunnel Lining Considerations

It was discussed during the testing that the lining design for the upgraded tunnel might be evaluated to see if improvements in the high frequency sound absorptive properties can be achieved. Using a perforated liner material that has the highest percentage open area available and that would be consistent with any aerodynamic considerations in the tunnel. It was noted that potential lining designs were being studied by using time domain pulse reflection evaluation techniques, which are useful for determining very high frequency reflections. The use of an acoustic impedance tube to evaluate the normal incidence sound absorption of potential lining solutions might also prove useful as that technique can be easier to evaluate in terms of total energy reflection than the time domain techniques tend to be. There are some high frequency limitations to this impedance tube method however, so both techniques might prove to be useful in selecting new tunnel lining design.

1.5 Conclusion

This summarizes my review of the measurements conducted to characterize the acoustic free field properties of the LSWT at NASA Glenn Research Center and provides my observations on the test results and recommendations for further improvements to the tunnel.

The data obtained during this study and the methods employed to obtain the data can be utilized again when the upgrades to the LSWT are completed in order to document the improvements achieved by the upgrades.

Part 2: Anechoic Environment Characterization Field Test Report

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ARL–AQ6761
Revision 1.2

Sound pressure level deviations from estimated inverse square law (per ISO 26101:2012)

Test Dates: July 11 to 14, 2016

1.0 Introduction and Executive Summary

An acoustic testing environment in a 9- by 15-ft Low Speed Wind Tunnel (LSWT) owned and operated by NASA Glenn Research Center, Cleveland, Ohio, 44135 was tested for acoustic characterization to the requirements for test environments of test method ISO 26101:2012, *Acoustics—Test methods for the qualification of free-field environments*. Testing was conducted by Brian Stahnke of ETS-Lindgren Inc. and Jeff Schmitt of ViAcoustics.

The chamber was found to exhibit precision grade free field properties in the frequency range consisting of one-third octave bands having center frequencies from 160 Hz to 20 kHz inclusive, out to a radial measurement distance of 1.15 m, when using slightly expanded criteria for the allowance deviations from inverse square law in a hemi-anechoic chamber as outlined in ISO 26101:2012. The chamber was also characterized over the full length of each traverse, extended as far as possible towards the LSWT measurement positions, with traverse paths of 2.2 to 4.2 m.

Details on the distances qualified, deviations measured, and criteria used are contained herein.

2.0 Chamber Description

The 9- by 15-ft Low Speed Wind Tunnel (LSWT) acoustic test facility at the NASA Glenn Research center is an approximately 8.5 m section of the wind tunnel that has been lined with an acoustically sound absorbing system and is used for conducting noise emission testing on jet propulsion systems. The cross section of the wind tunnel is approximately 2.74- by 4.57-m, or about 9- by 15-ft, thus the 9- by 15-ft LSWT designation of the facility. The acoustic lining treatment has been applied to the walls, ceiling and floor of the acoustic test section and is covered by a perforated steel sheet that protects the internal fill from shedding into the wind tunnel. The exact details of the acoustic lining material are reported elsewhere. The upstream and downstream ends of the tunnel are open into large metal ductwork that does not contain any acoustic treatments. The wind tunnel contains a moving microphone system on a track that is used for conducting simulated pass by measurements from the propulsion system.

Although the acoustic test section is neither an anechoic or hemi-anechoic chamber with treatments on all six surfaces, the free field qualification and characterization methods of ISO 26101:2012 were employed an attempt to characterize the acoustic properties of both the lining and the acoustic test section for sound pressure level measurements from an omni-directional source when compared to the theoretical inverse square law spreading

3.0 Test Description

ISO 26101:2012 describes a method for qualifying anechoic chambers to determine their acceptability for use in precision-grade sound power level determinations in accordance with the standard. Testing and data analysis was conducted in accordance with ISO 26101:2012. Details specific to this testing are described below.

Multiple loudspeaker configurations meeting ISO 26101 source directionality requirements were used for testing. Sequentially, each loudspeaker configuration was suspended in the air in the vertical spatial center of the environment and in a plan location of the environment representing the standard engine location. A signal was supplied to the loudspeaker consisting of multiple pure tones. The combination of multiple loudspeakers covered all one-third octave bands from 1,600 Hz to 20 kHz inclusive, for which data is reported herein. A microphone traverse mechanism was used to move a free-field microphone along a linear traverse path away from these sound sources. Using automated control of the microphone position and data acquisition system, one-third octave band sound pressure level were measured at discrete 25 or 50 mm incremental distances depending on frequency range, starting at a distance of 500 mm from the physical center of the sound source and ending at least 2,200 mm from the sound source. This testing sequence was repeated for five different directions of traverse, using all loudspeaker configurations to cover the frequency range of interest. A stationary reference microphone was used to monitor and correct source output levels.

Measured sound pressure levels were used to determine estimated sound pressure levels based on the inverse square law as specified in ISO 26101:2012 Section 5.1.5. Specifically, estimated sound pressure levels were calculated using 14 (for 50 mm spacing) or 27 (for 25 mm spacing) measured data points between 500 and 1,150 mm inclusive for all one-third octave bands and applying ISO 26101:2012 equation 2. Deviations from inverse square law were then calculated using ISO 26101:2012 equation 4. Table 1 shows the calculated uncertainty of the acoustic environment based on this test program.

TABLE 1.—MAXIMUM DEVIATIONS OF MEASURED SOUND PRESSURE LEVELS FROM THEORETICAL LEVELS USING A BEST-FIT METHOD OF MODIFIED HEMI-ANECHOIC DEVIATIONS FROM ISO 26101:2012 TABLE A.1

One-third-octave band frequency (Hz)	Deviations as per modified ISO 26101 (dB)
160	± 2.5
200	± 2.5
250	± 2.5
315	± 2.5
400	± 2.5
500	± 2.5
630	± 3.0
800	± 3.0
1,000	± 2.5
1,250	± 3.0
1,600	± 3.5
2,000	± 3.0
2,500	± 3.0
3,150	± 3.0
4,000	± 3.5
5,000	± 3.5
6,300	± 4.0
8,000	± 3.5
10,000	± 3.5
12,500	± 3.5
16,000	± 4.5
20,000	± 3.5

4.0 Test Results—Deviations from Estimated Inverse Square Law

This section presents the results showing deviations from inverse square law from 160 Hz to 20 kHz for five different traverses performed inside the environment. Figure 1 shows the direction of all five traverses performed for the purpose of this environment qualification. Two of these traverses were conducted into the northeast and northwest upper trihedral corners of the room, one traverse was conducted into the north upper dihedral corner, one traverse was conducted towards a point along the north wall, and one traverse was directed to the east in the direction of the downstream wind tunnel. For all traverses, the microphone was moved by 25 or 50 mm incremental distances, depending on the frequency, starting from a distance of 500 mm from the source to at least a distance of 2,200 mm from the source. Acquired data were then compared to estimated inverse square law values, and deviations from the estimated inverse square law were used to generate the uncertainty characterization of the environment. All deviations presented herein were calculated using data from sources that meets directionality requirements specified under ISO 26101 Annex B. For each direction of traverse, deviations from the estimated inverse square law are presented graphically in Figure 2 to Figure 111. Numerical values for the deviations of each traverse are shown in Table 2 to Table 6.

Appendix A contains Figure A.1 to Figure A.110 and Table A.1 to Table A.5 for the entire measured distance in each traverse direction as used for chamber characterization. Appendix B contains Figure B.1 to Figure B.5, depictions of the test environment.

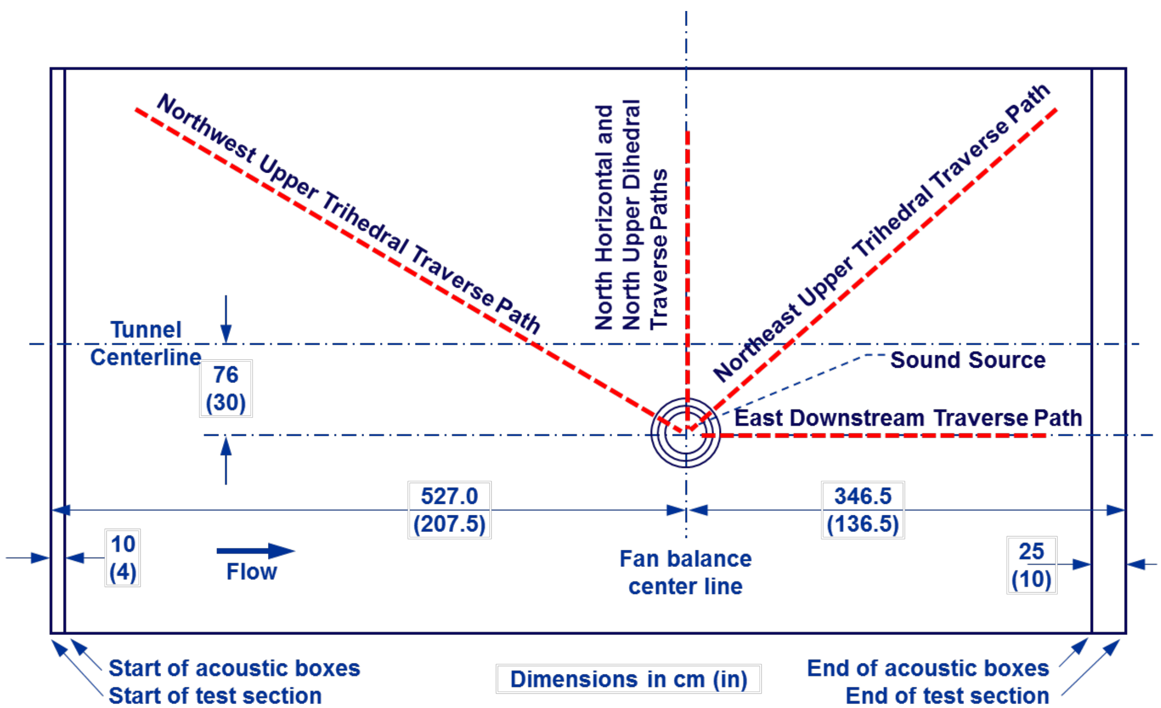

Figure 1.—Plan view of sound source location and traverse lines

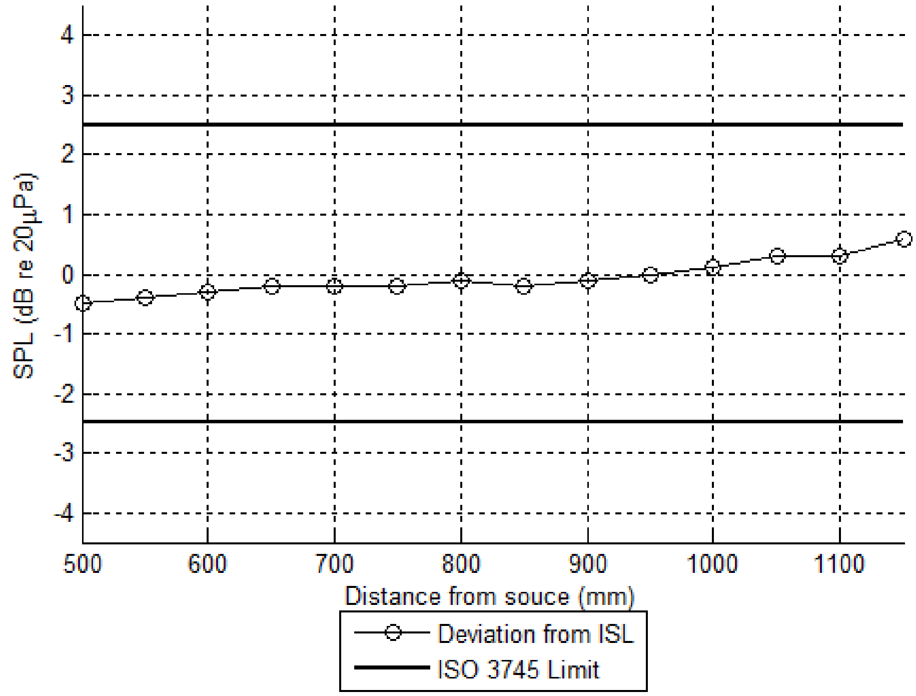

Figure 2.—East Horizontal Traverse Mid Frequency, 160 Hz, Pure Tones

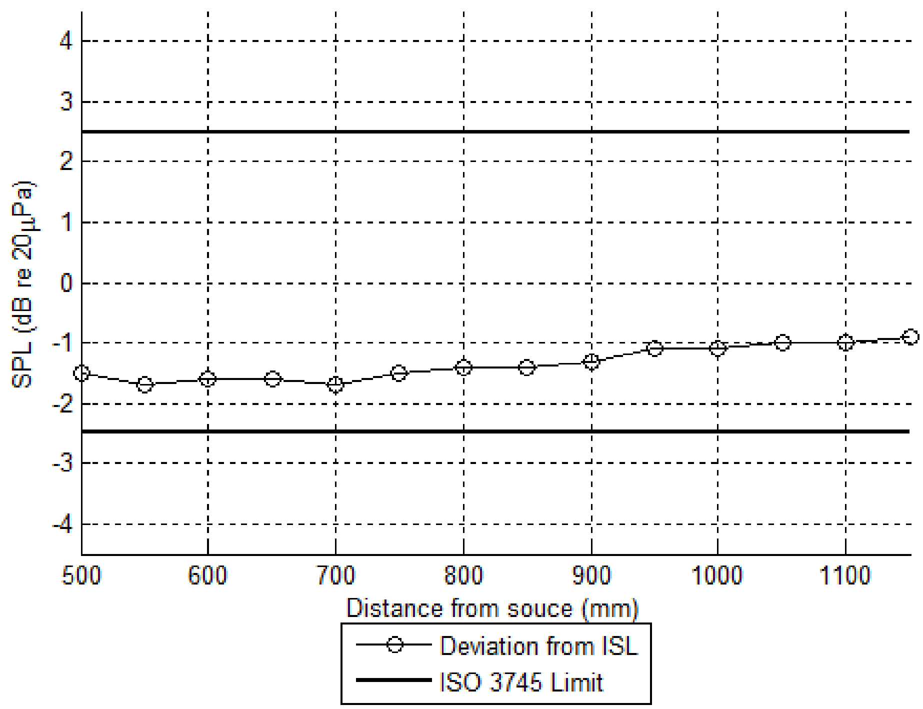

Figure 3.—East Horizontal Traverse Mid Frequency, 200 Hz, Pure Tones

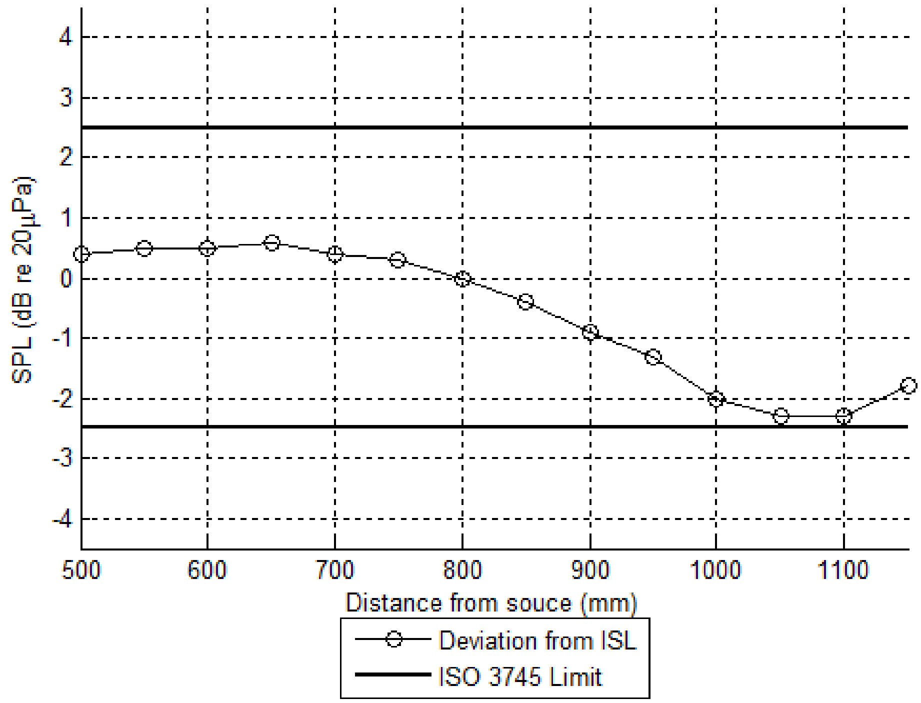

Figure 4.—East Horizontal Traverse Mid Frequency, 250 Hz, Pure Tones

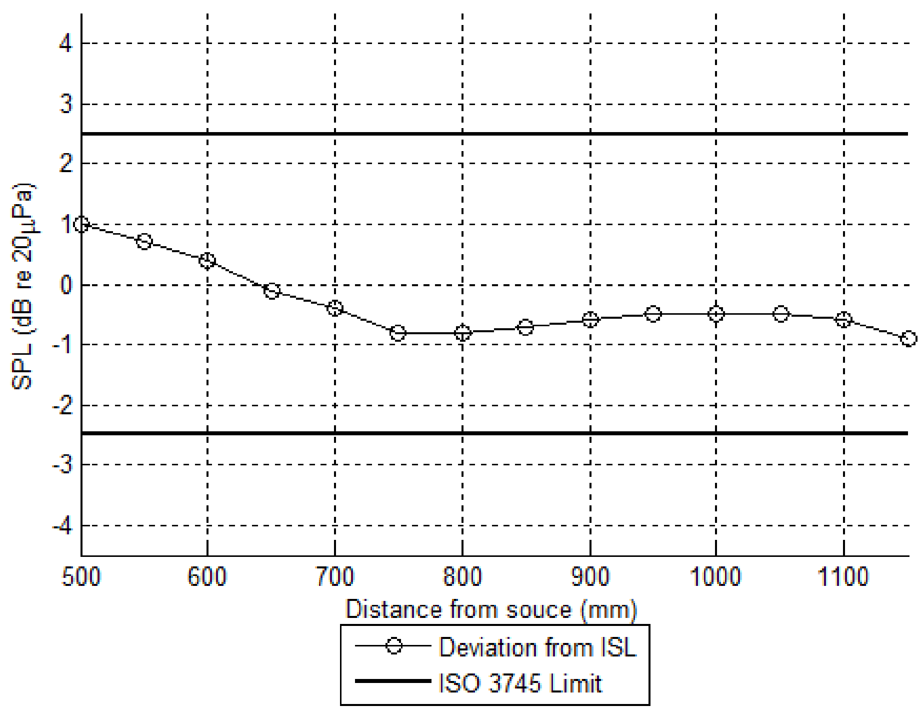

Figure 5.—East Horizontal Traverse Mid Frequency, 315 Hz, Pure Tones

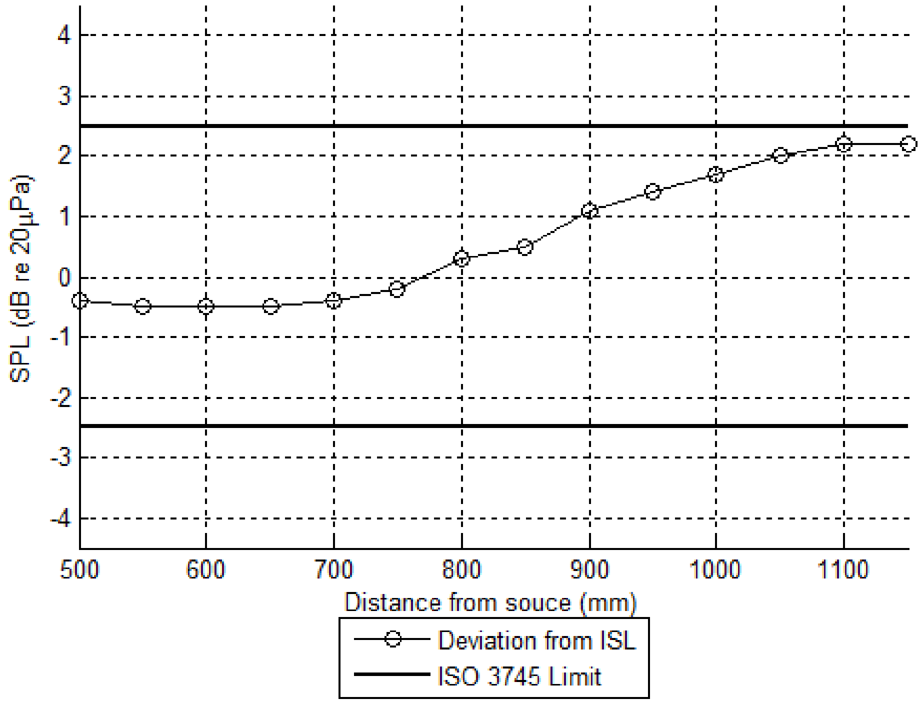

Figure 6.—East Horizontal Traverse Mid Frequency, 400 Hz, Pure Tones

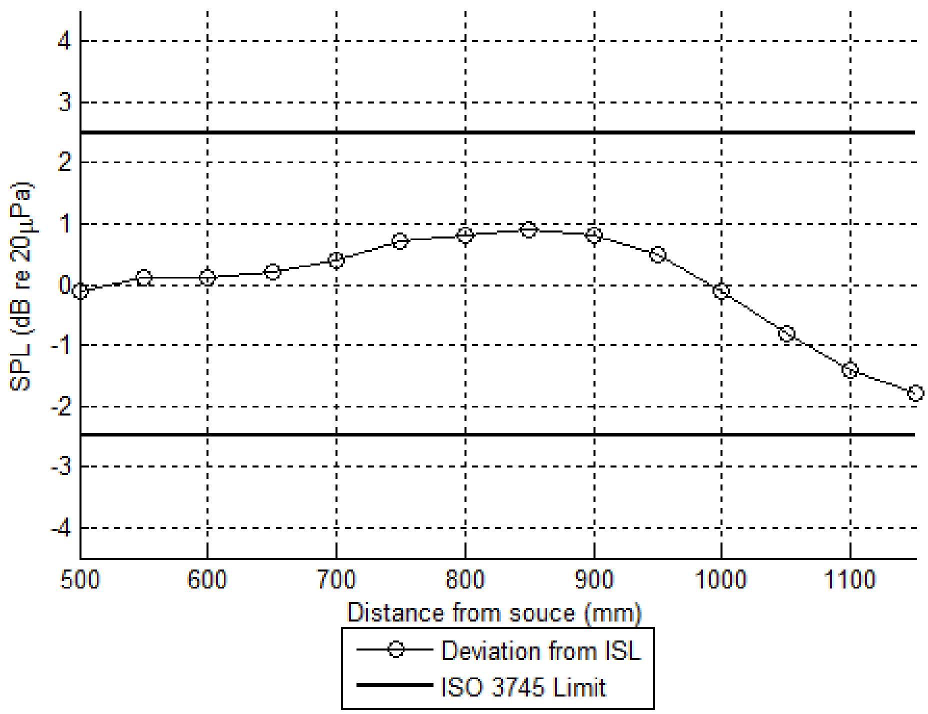

Figure 7.—East Horizontal Traverse Mid Frequency, 250 Hz, Pure Tones

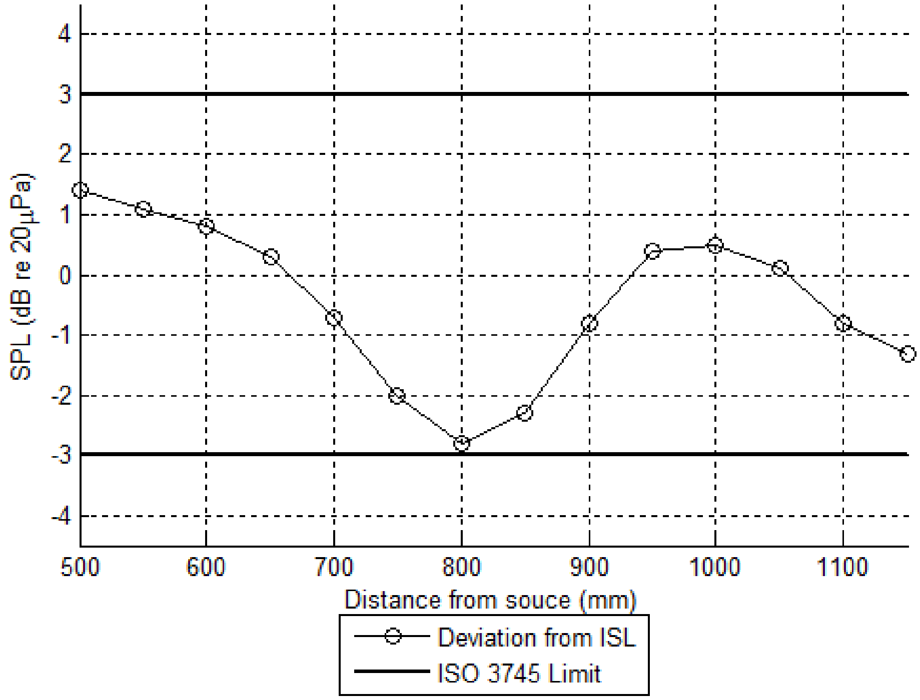

Figure 8.—East Horizontal Traverse Mid Frequency, 630 Hz, Pure Tones

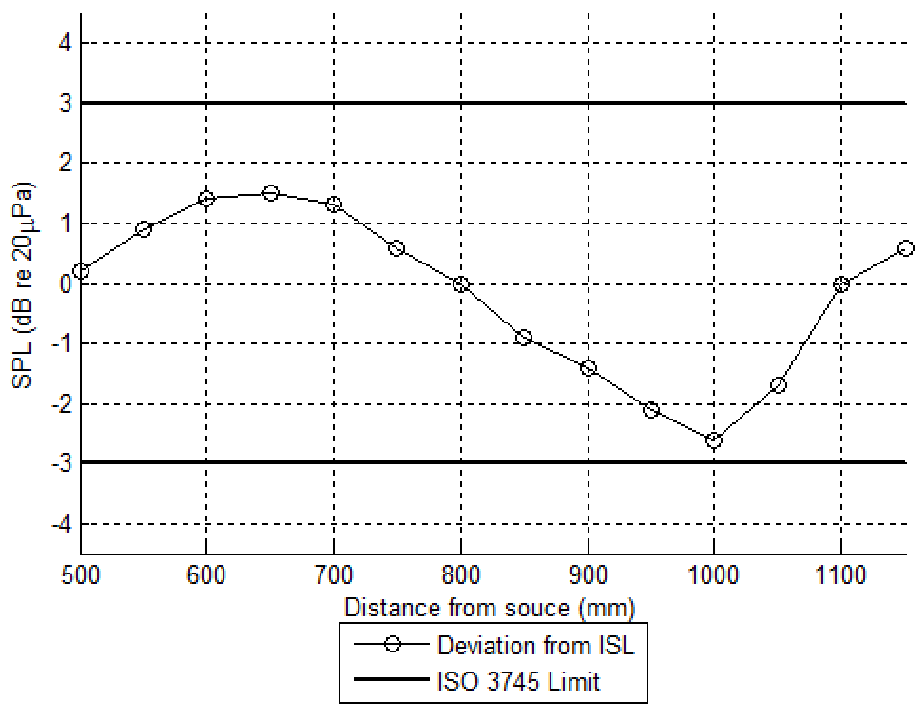

Figure 9.—East Horizontal Traverse Mid Frequency, 800 Hz, Pure Tones

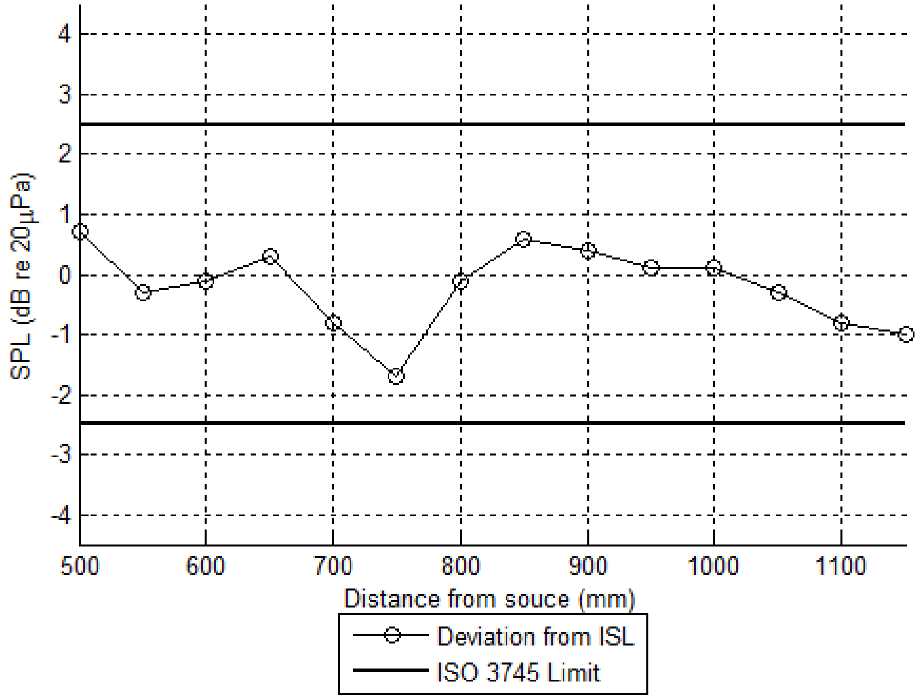

Figure 10.—East Horizontal Traverse Mid Frequency, 1,000 Hz, Pure Tones

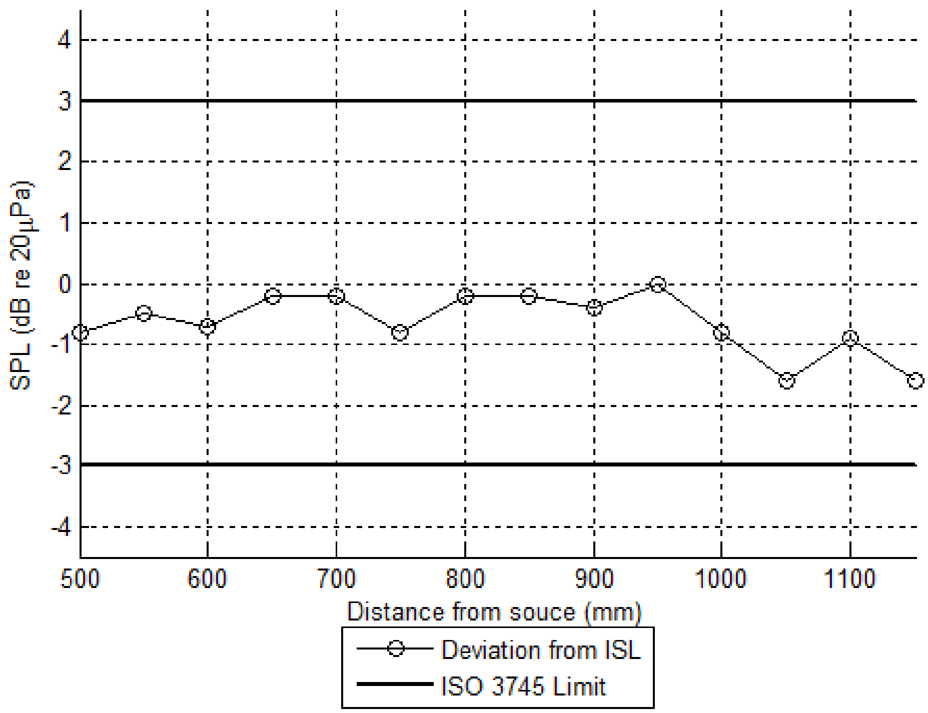

Figure 11.—East Horizontal Traverse Mid Frequency, 1,250 Hz, Pure Tones

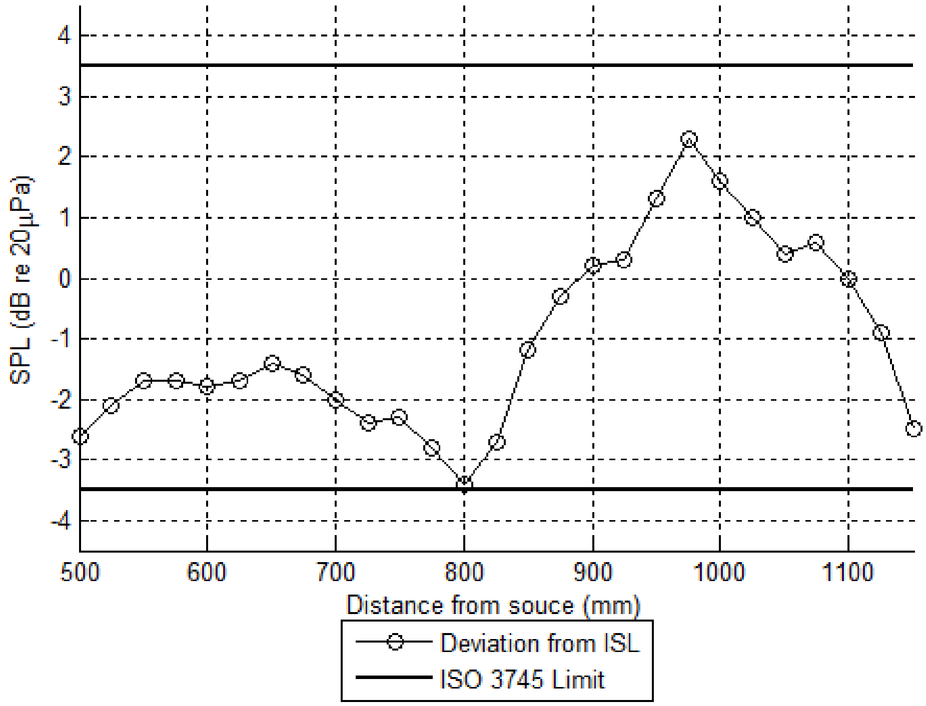

Figure 12.—East Horizontal Traverse High Frequency, 1,600 Hz, Pure Tones

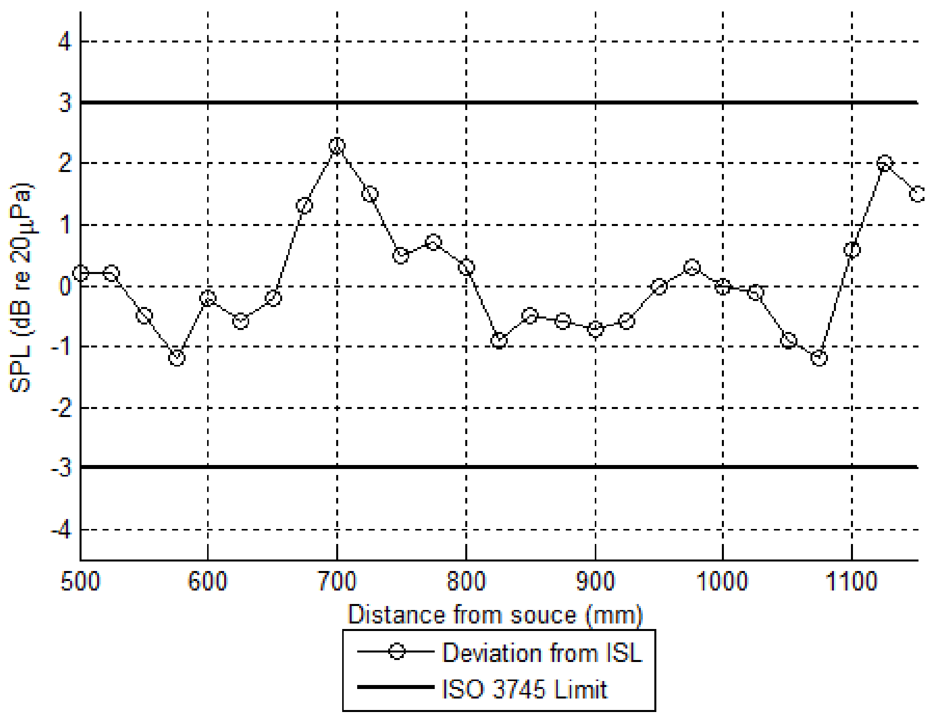

Figure 13.—East Horizontal Traverse High Frequency, 2,000 Hz, Pure Tones

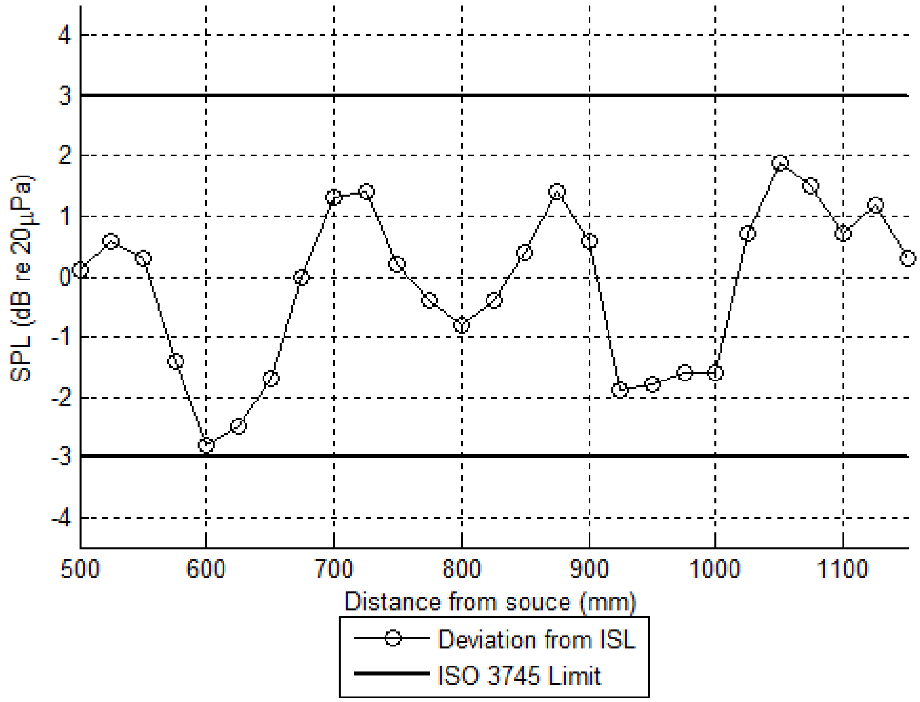

Figure 14.—East Horizontal Traverse High Frequency, 2,500 Hz, Pure Tones

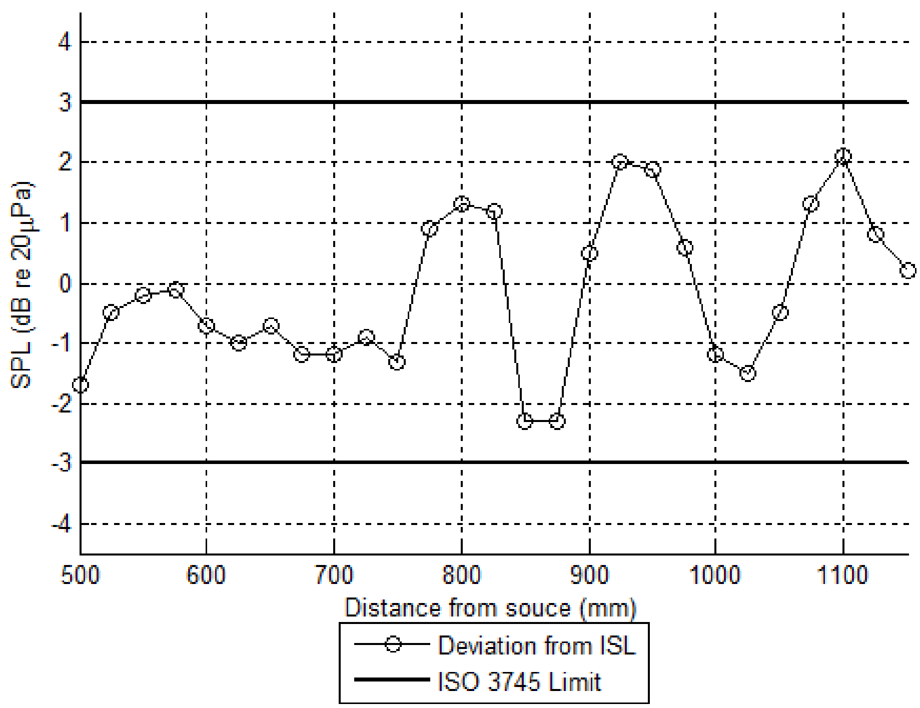

Figure 15.—East Horizontal Traverse High Frequency, 3,150 Hz, Pure Tones

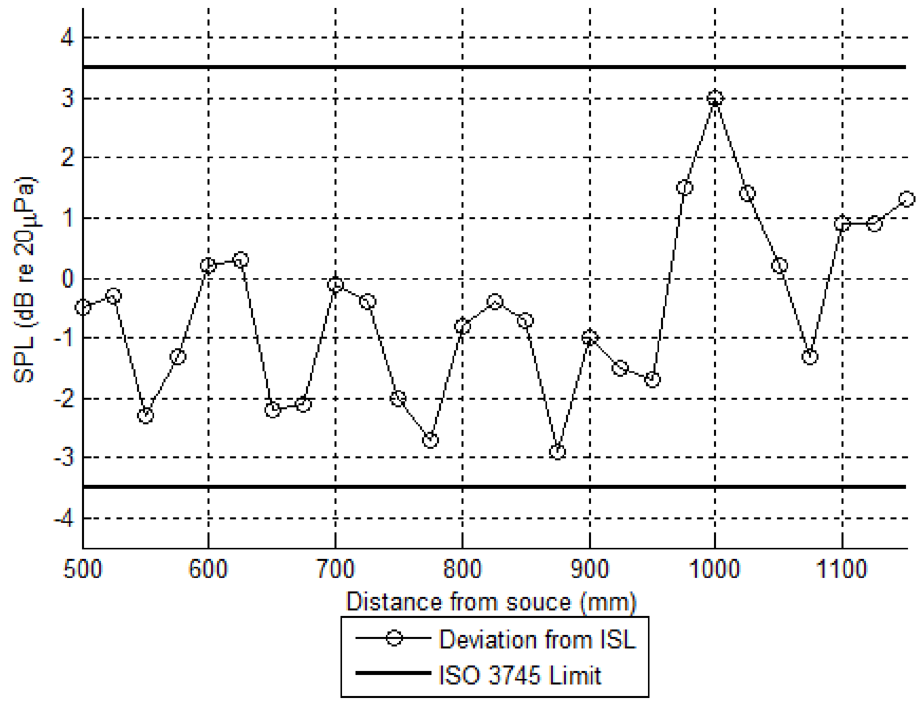

Figure 16.—East Horizontal Traverse High Frequency, 4,000 Hz, Pure Tones

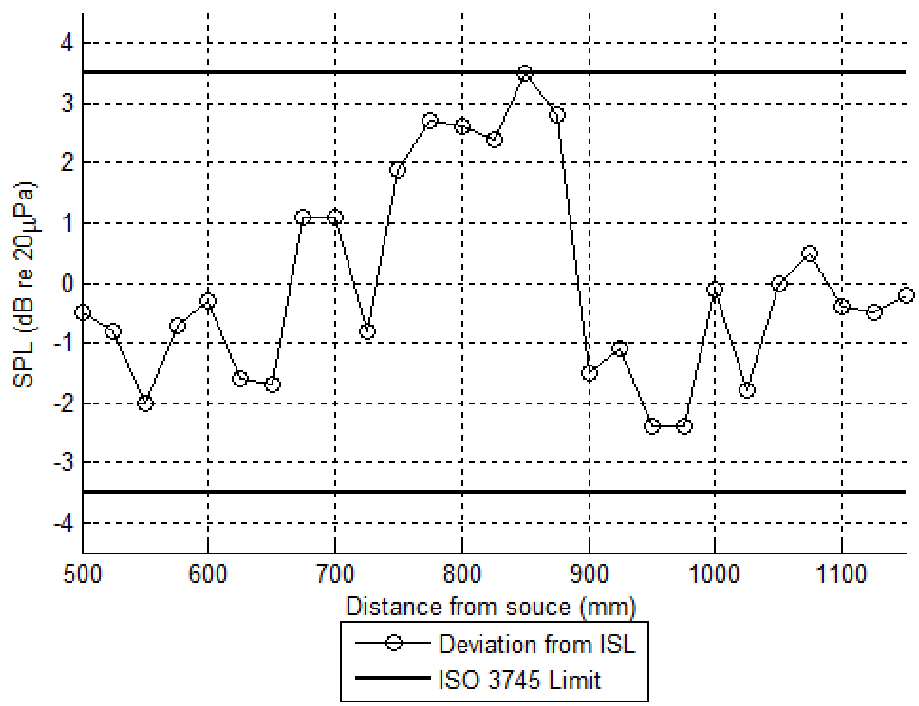

Figure 17.—East Horizontal Traverse High Frequency, 5,000 Hz, Pure Tones

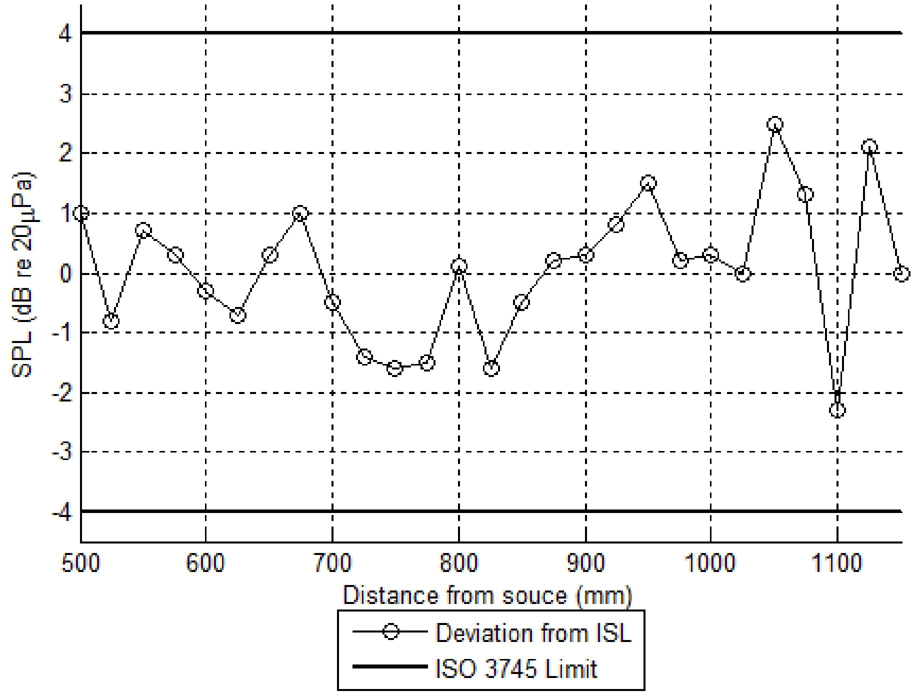

Figure 18.—East Horizontal Traverse High Frequency, 6,300 Hz, Pure Tones

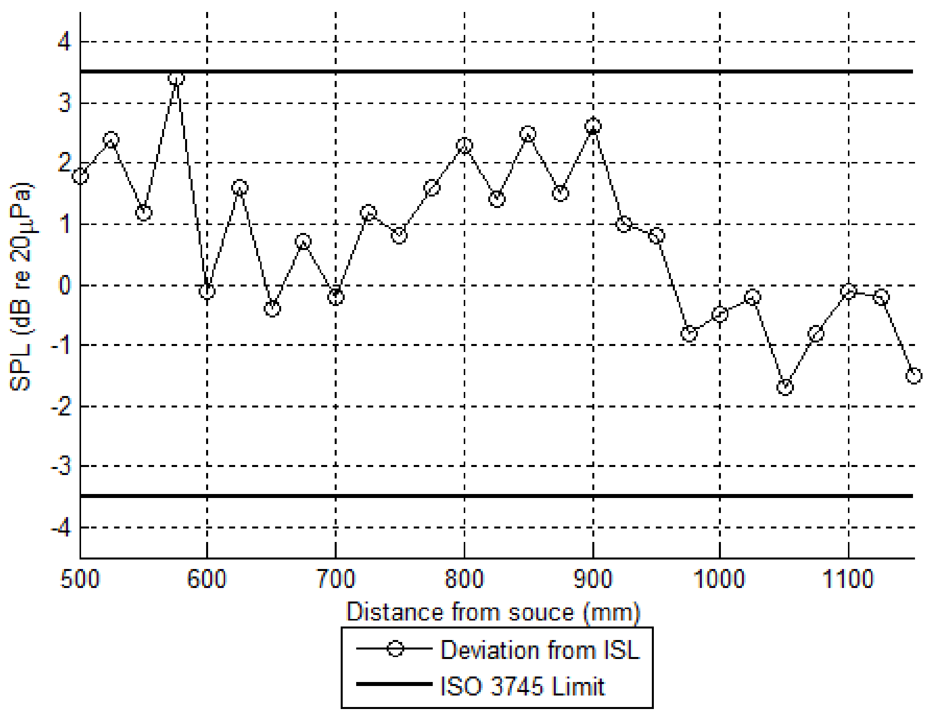

Figure 19.—East Horizontal Traverse High Frequency, 8,000 Hz, Pure Tones

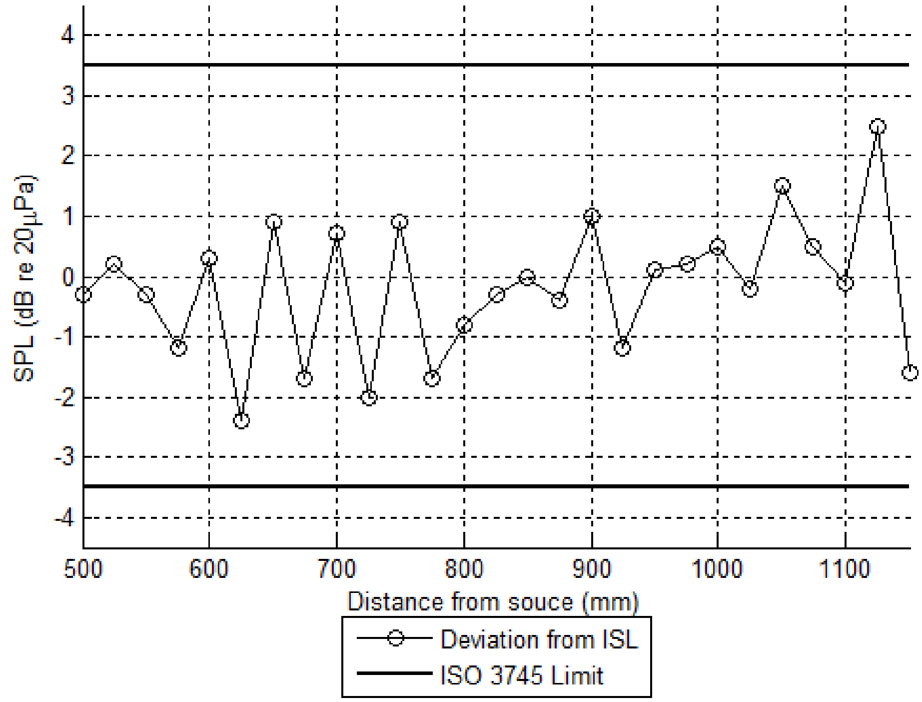

Figure 20.—East Horizontal Traverse High Frequency, 10,000 Hz, Pure Tones

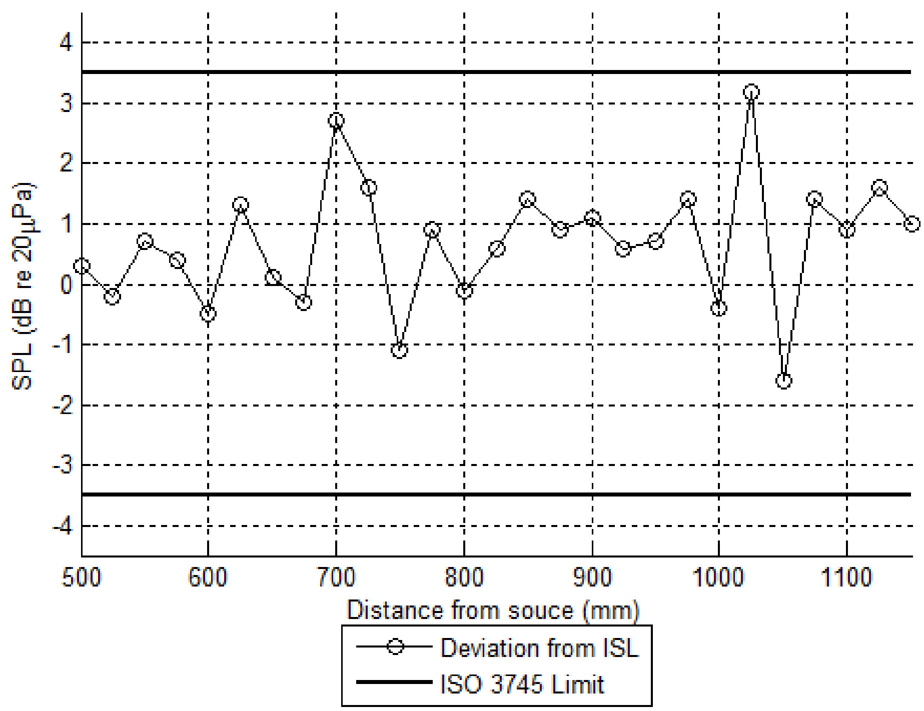

Figure 21.—East Horizontal Traverse High Frequency, 12,500 Hz, Pure Tones

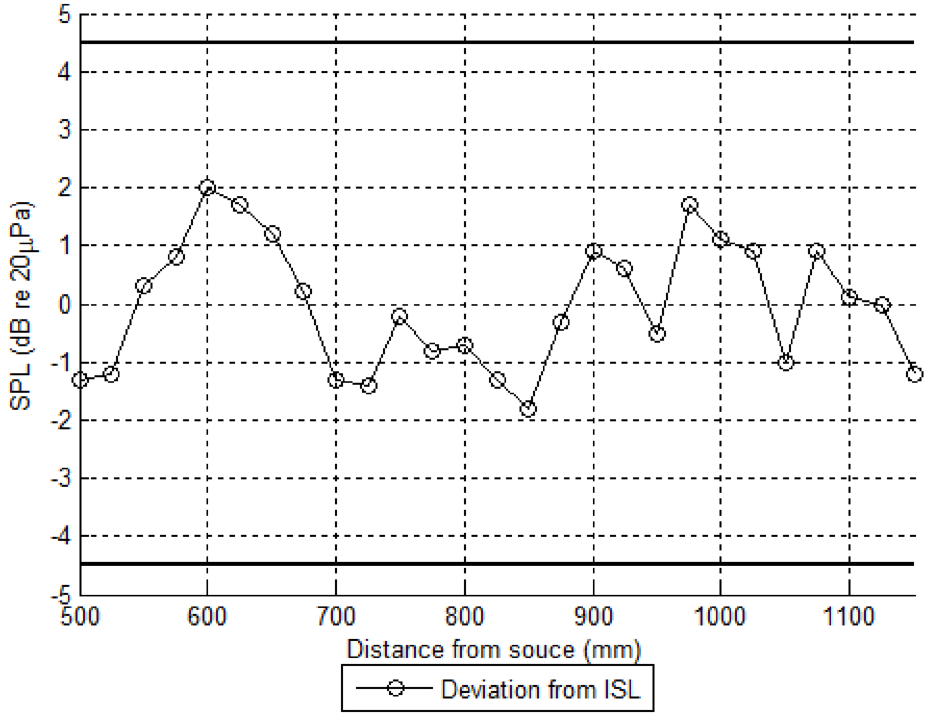

Figure 22.—East Horizontal Traverse High Frequency, 16,000 Hz, Pure Tones

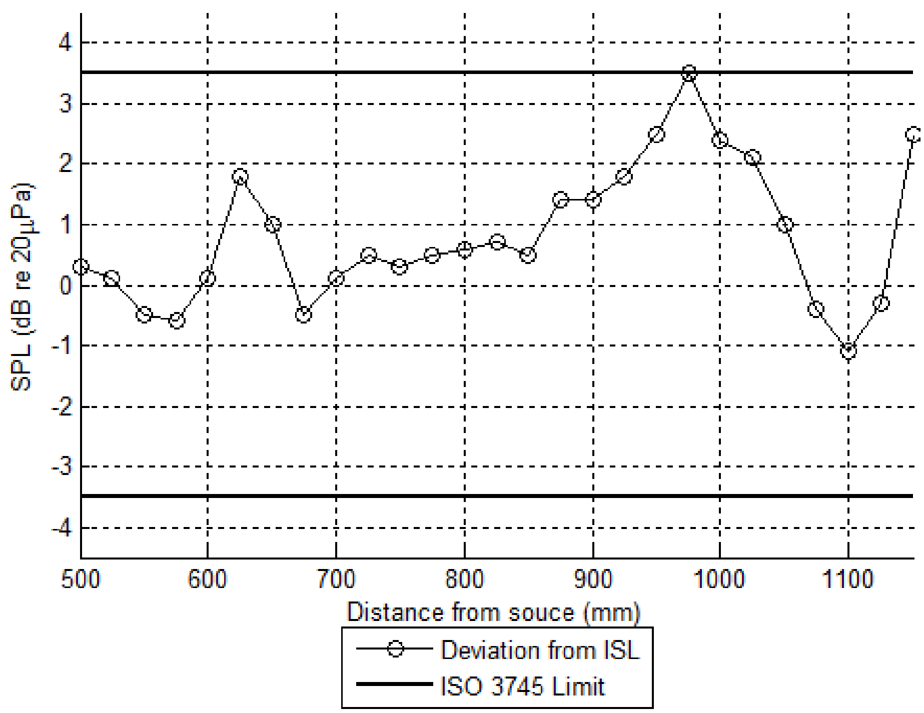

Figure 23.—East Horizontal Traverse High Frequency, 20,000 Hz, Pure Tones

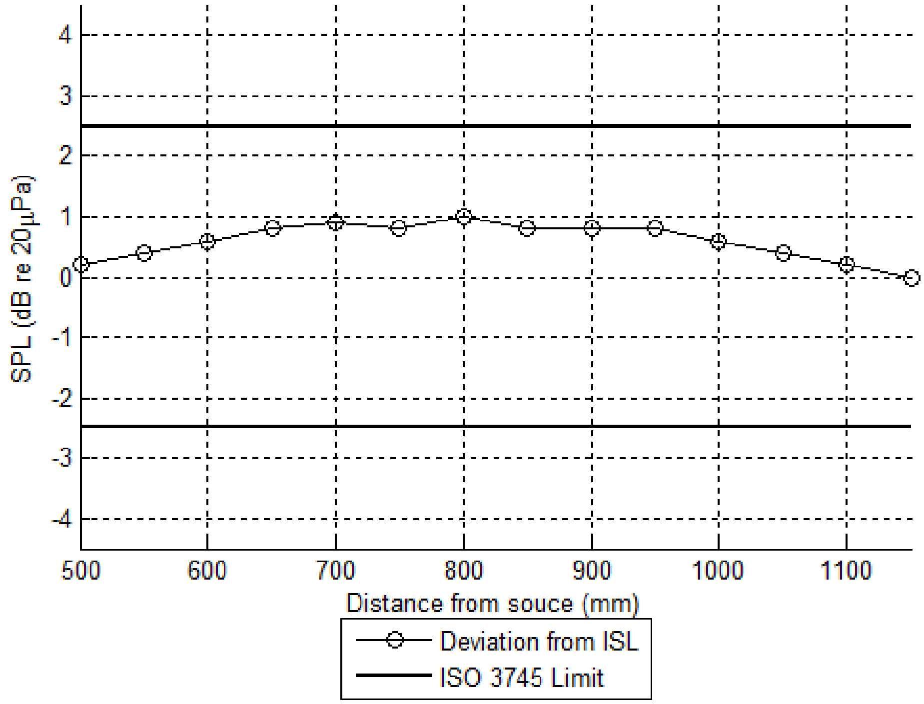

Figure 24.—North Horizontal Wall Traverse Mid Frequency, 160 Hz, Pure Tones

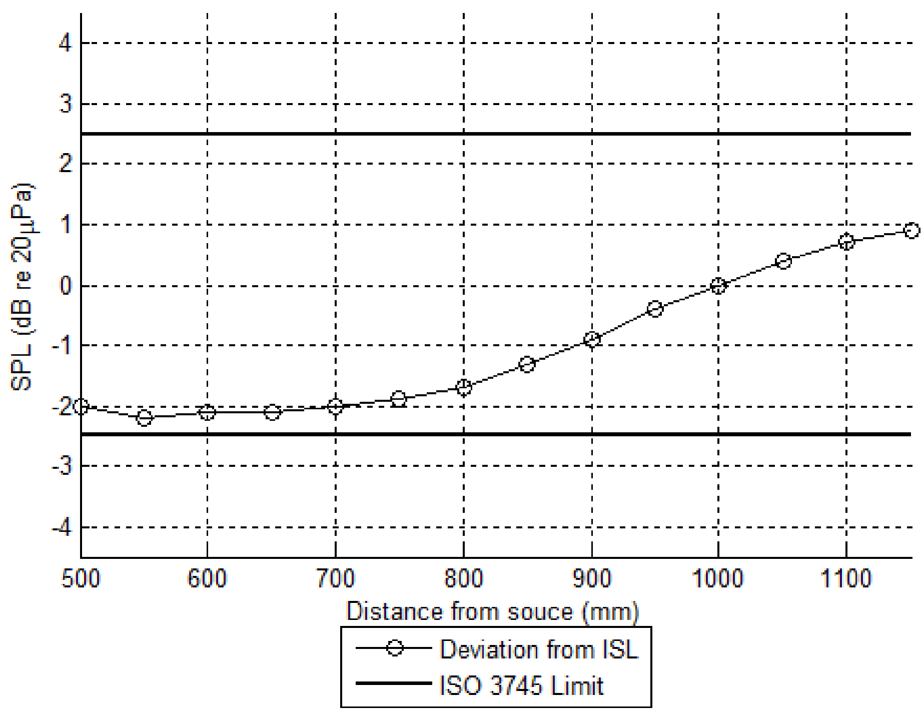

Figure 25.—North Horizontal Wall Traverse High Frequency, 200 Hz, Pure Tones

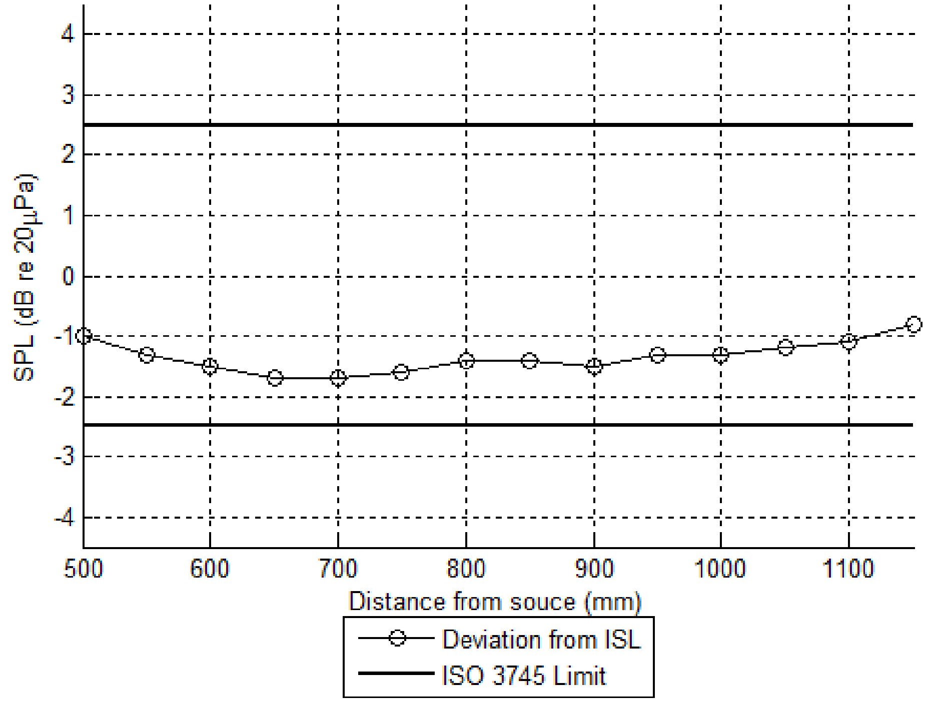

Figure 26.—North Horizontal Wall Traverse High Frequency, 250 Hz, Pure Tones

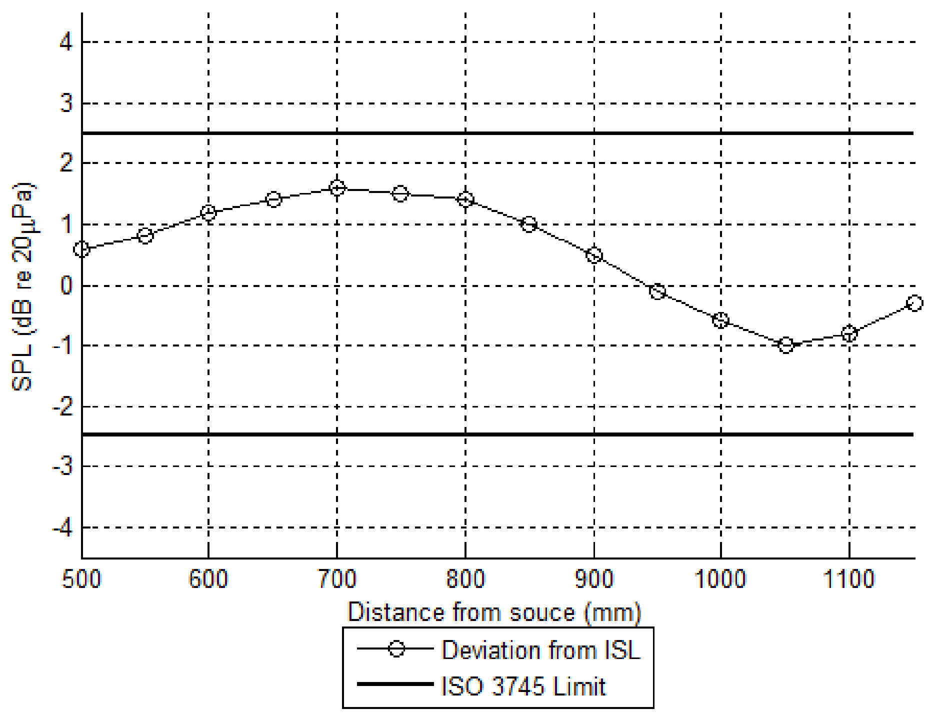

Figure 27.—North Horizontal Wall Traverse High Frequency, 315 Hz, Pure Tones

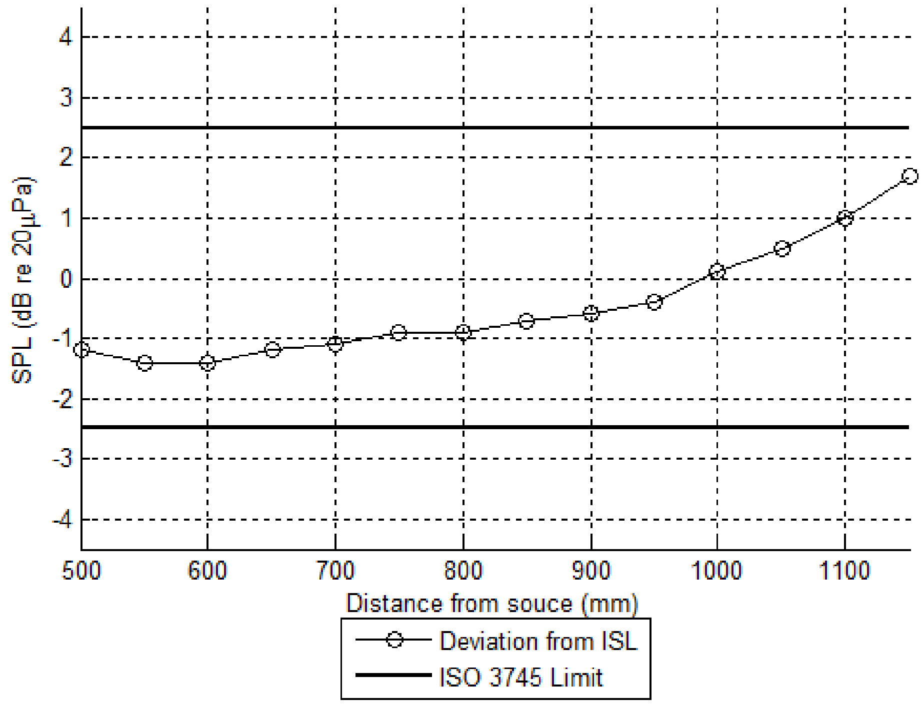

Figure 28.—North Horizontal Wall Traverse High Frequency, 400 Hz, Pure Tones

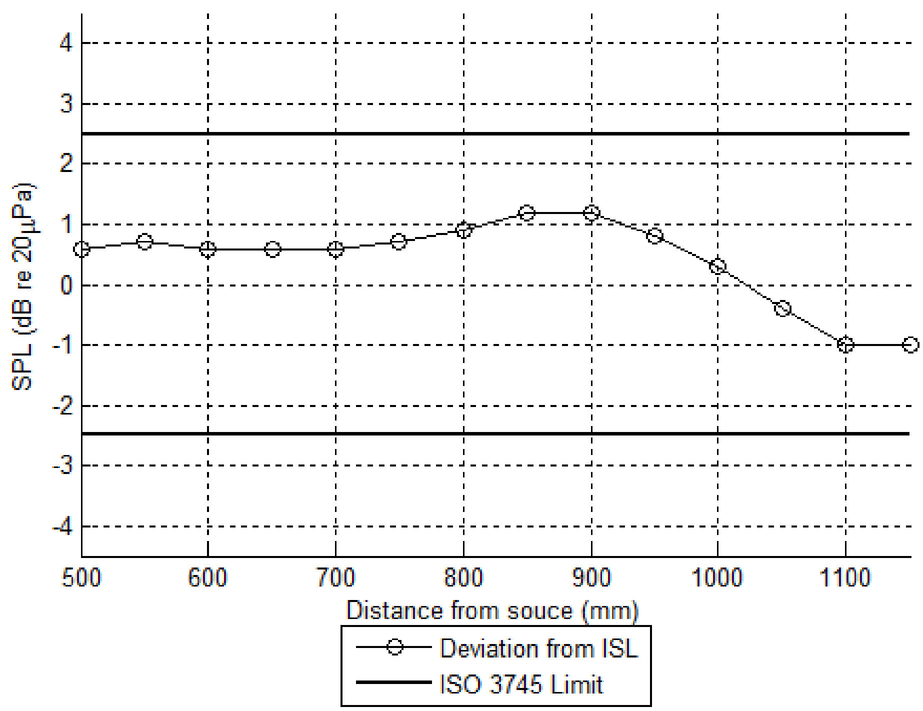

Figure 29.—North Horizontal Wall Traverse High Frequency, 500 Hz, Pure Tones

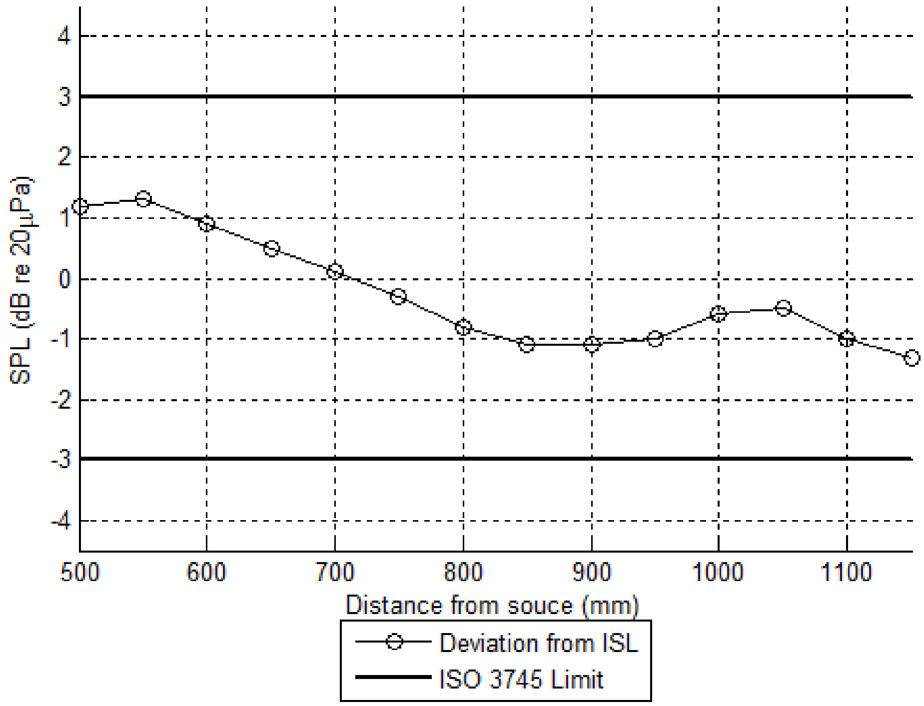

Figure 30.—North Horizontal Wall Traverse Mid Frequency, 630 Hz, Pure Tones

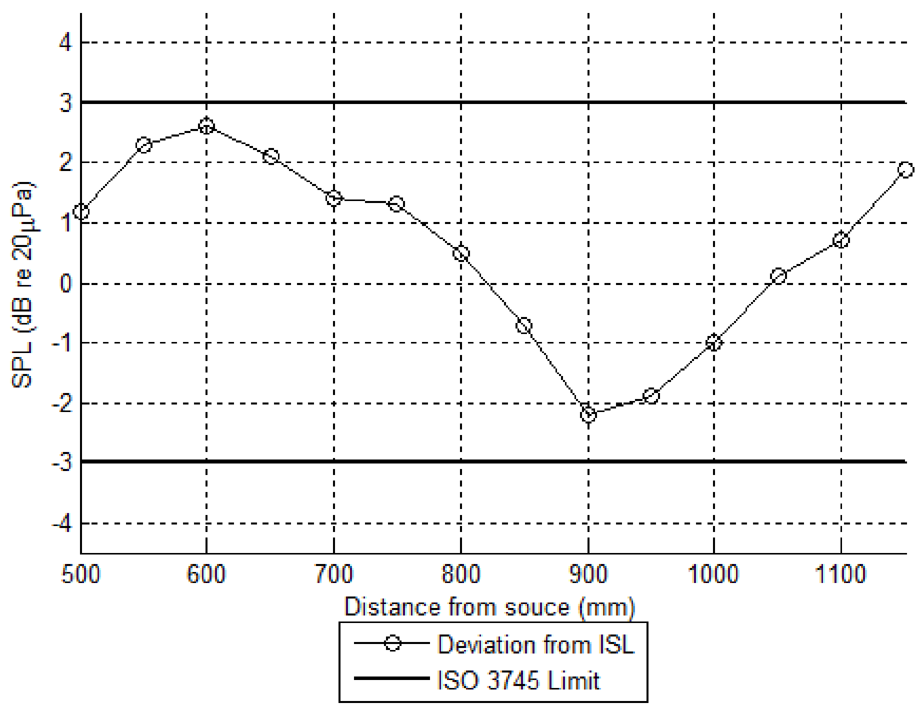

Figure 31.—North Horizontal Wall Traverse Mid Frequency, 800 Hz, Pure Tones

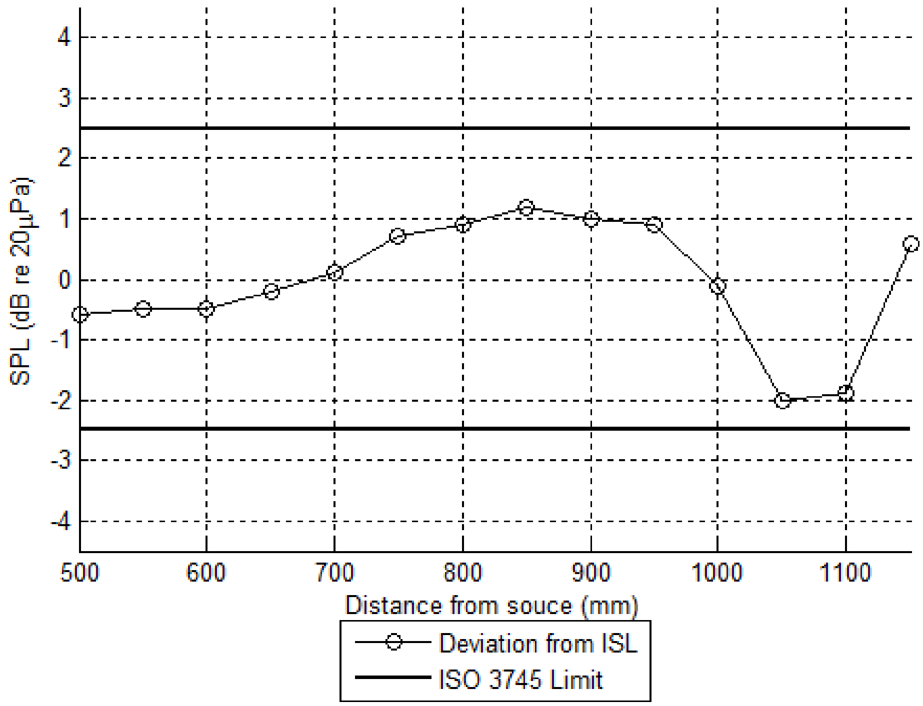

Figure 32.—North Horizontal Wall Traverse Mid Frequency, 1,000 Hz, Pure Tones

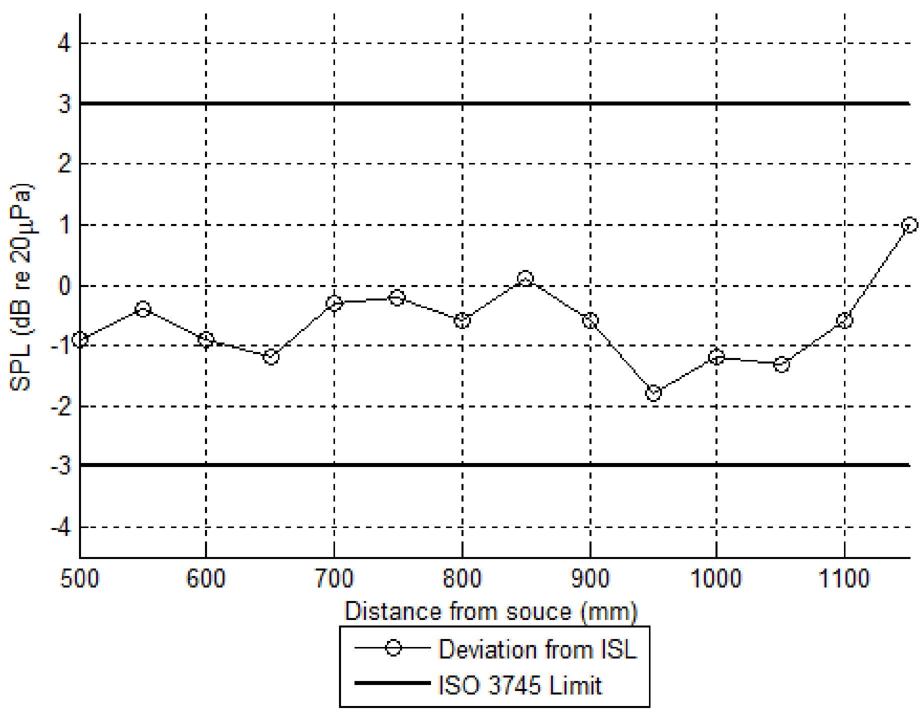

Figure 33.—North Horizontal Wall Traverse Mid Frequency, 1,250 Hz, Pure Tones

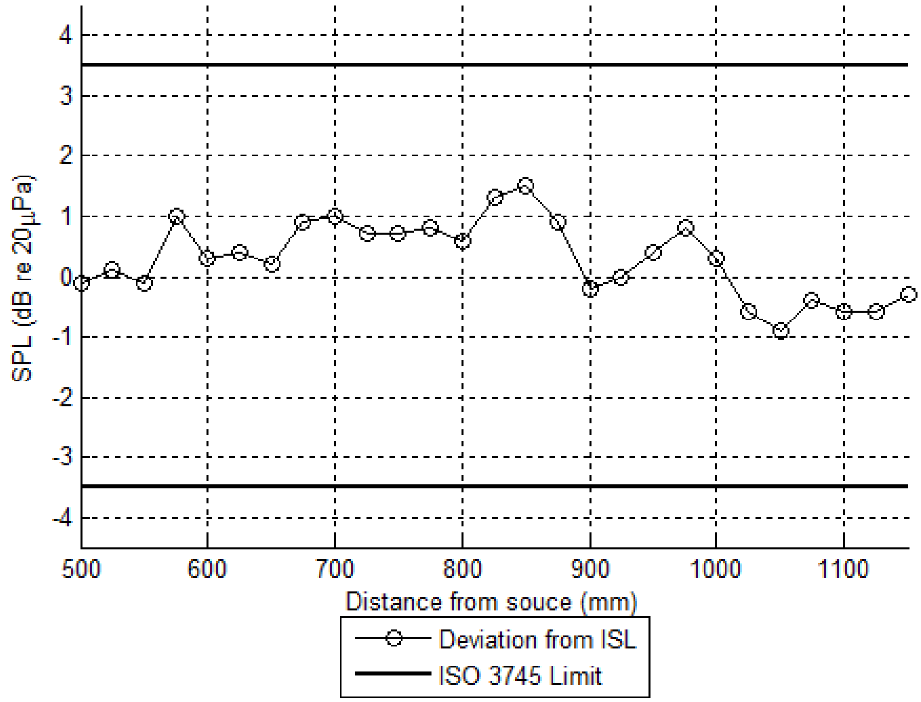

Figure 34.—North Horizontal Wall Traverse High Frequency, 1,600 Hz, Pure Tones

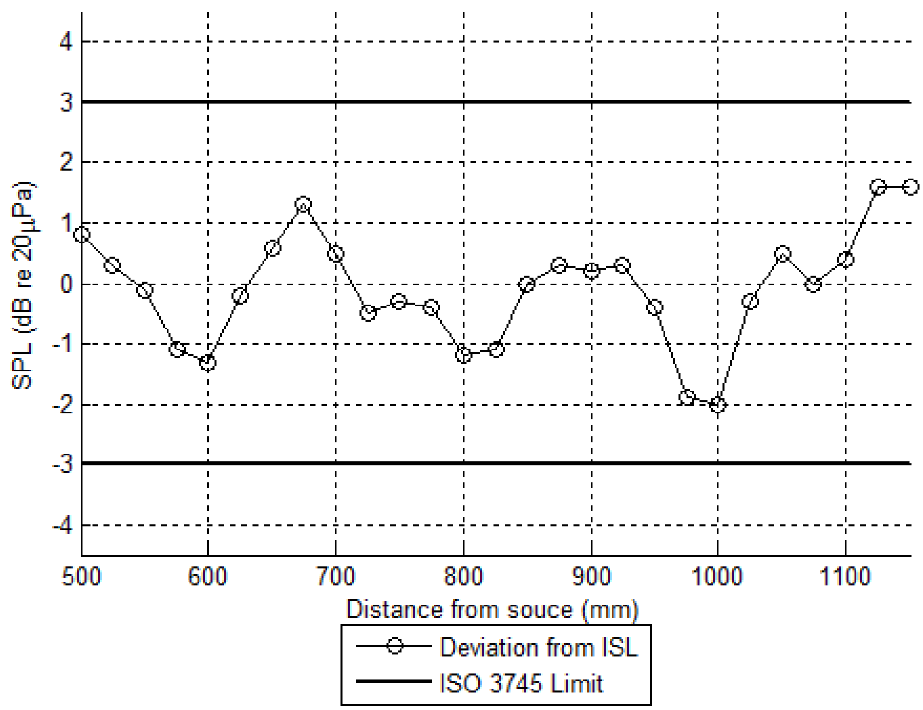

Figure 35.—North Horizontal Wall Traverse High Frequency, 2,000 Hz, Pure Tones

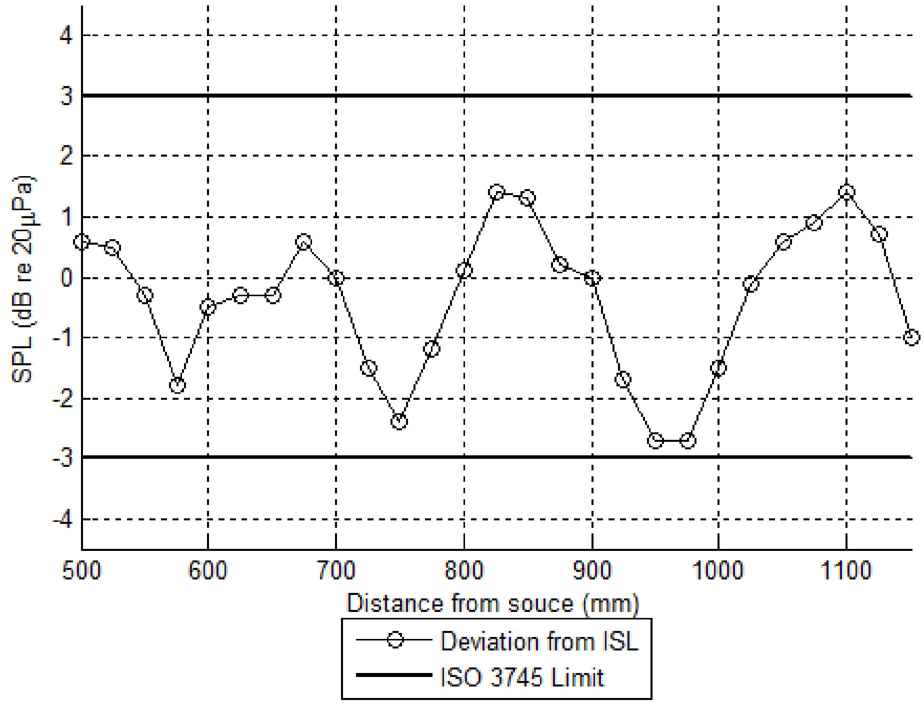

Figure 36.—North Horizontal Wall Traverse High Frequency, 2,500 Hz, Pure Tones

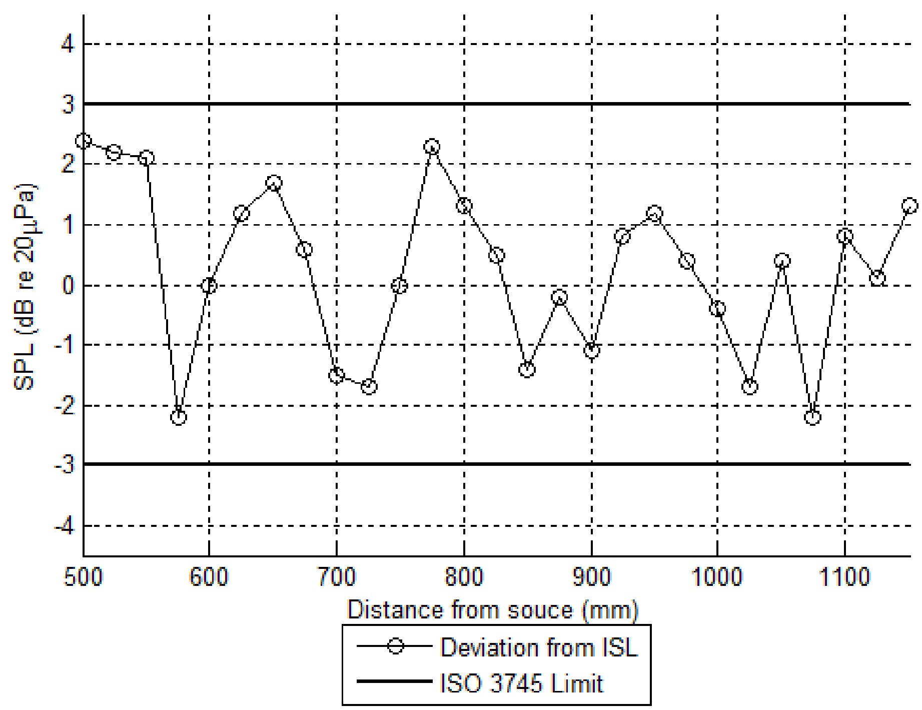

Figure 37.—North Horizontal Wall Traverse High Frequency, 3,150 Hz, Pure Tones

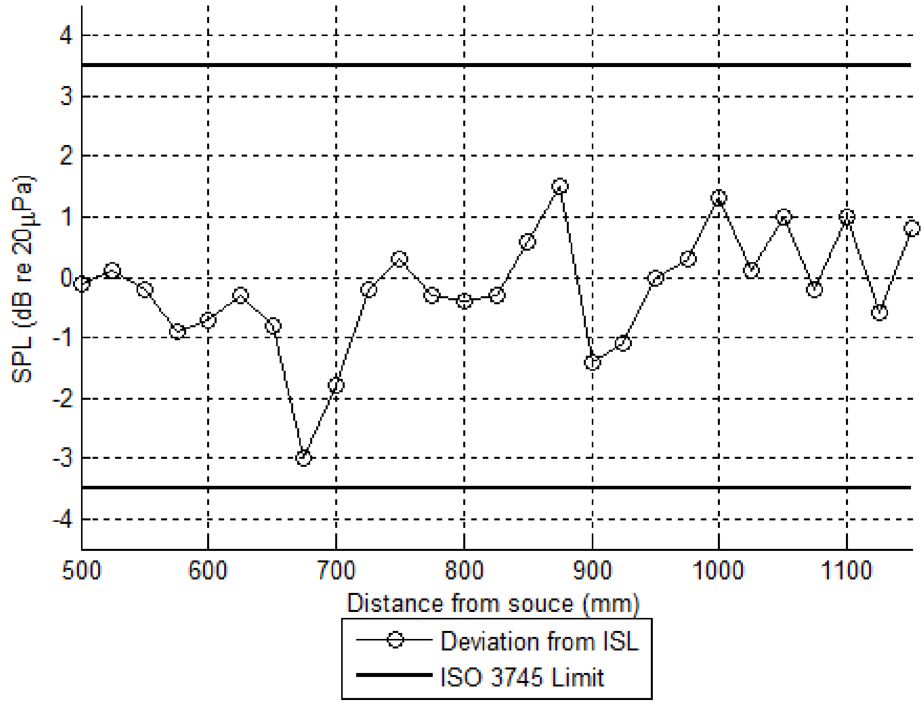

Figure 38.—North Horizontal Wall Traverse High Frequency, 4,000 Hz, Pure Tones

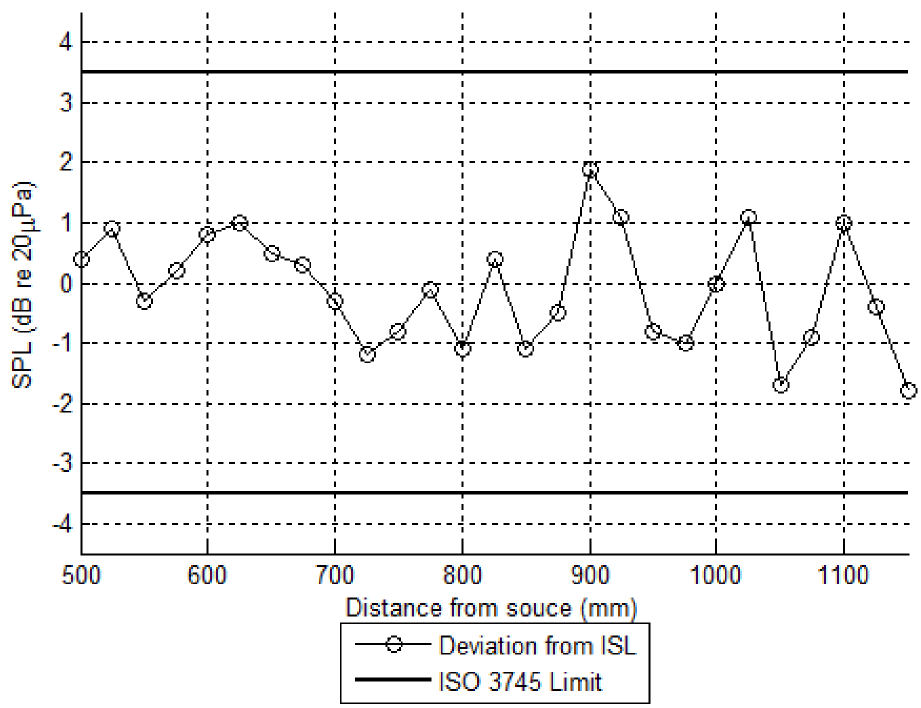

Figure 39.—North Horizontal Wall Traverse High Frequency, 5,000 Hz, Pure Tones

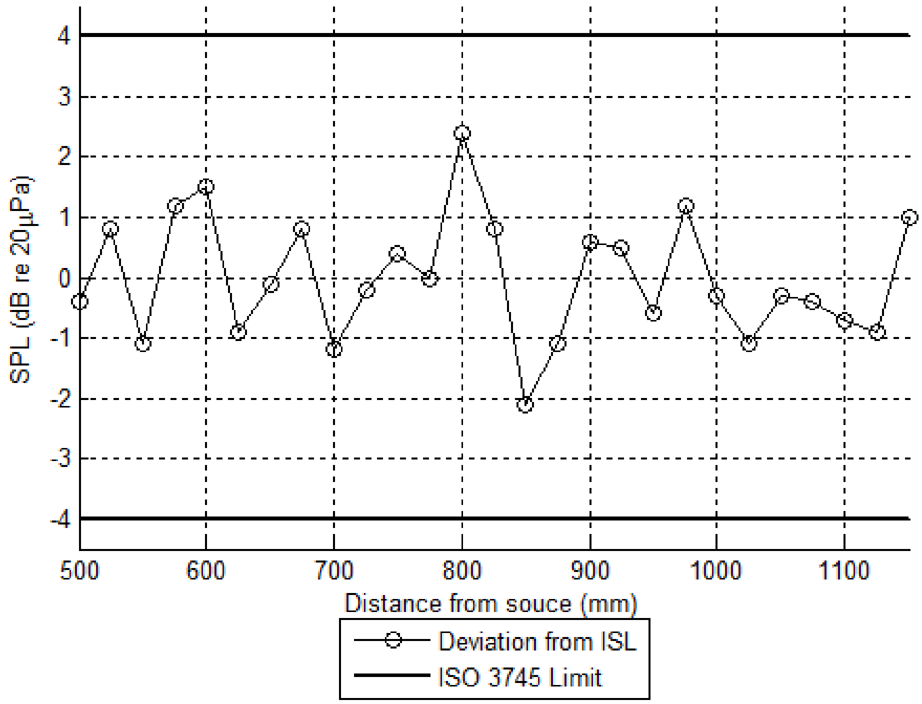

Figure 40.—North Horizontal Wall Traverse High Frequency, 6,300 Hz, Pure Tones

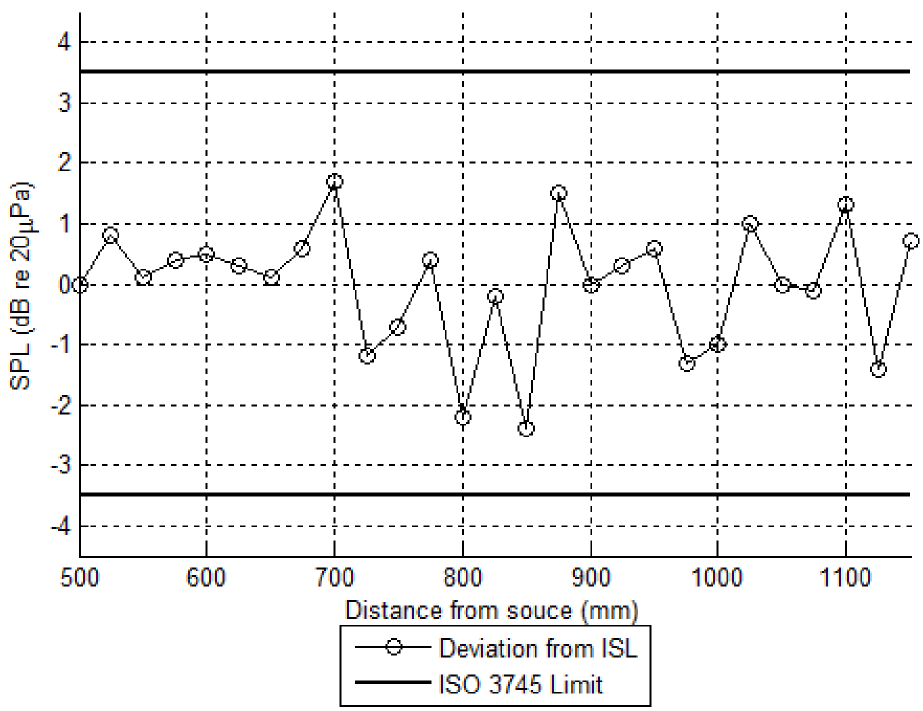

Figure 41.—North Horizontal Wall Traverse High Frequency, 8,000 Hz, Pure Tones

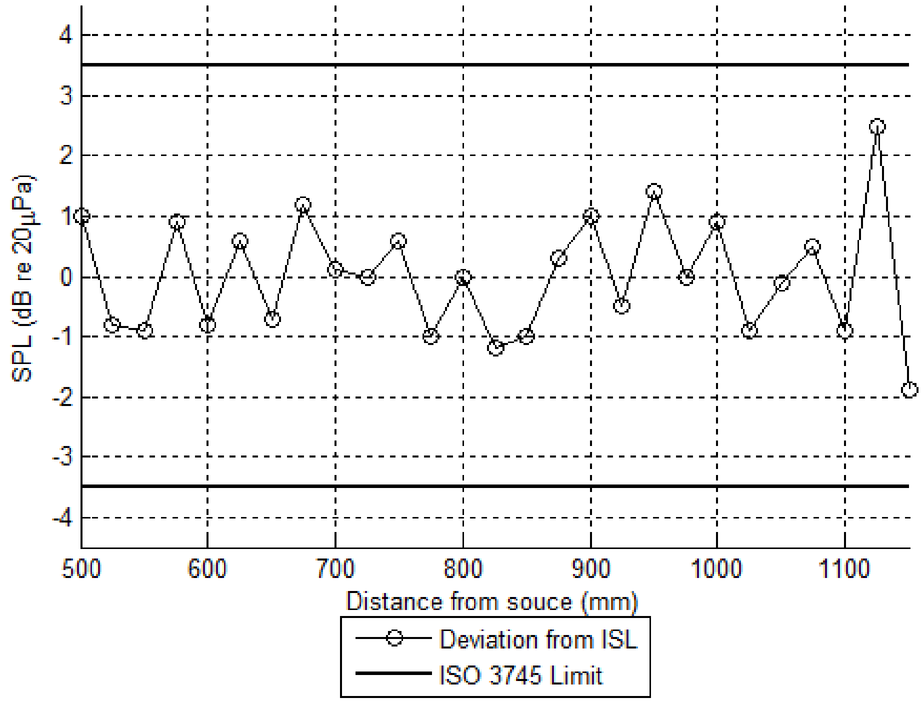

Figure 42.—North Horizontal Wall Traverse High Frequency, 10,000 Hz, Pure Tones

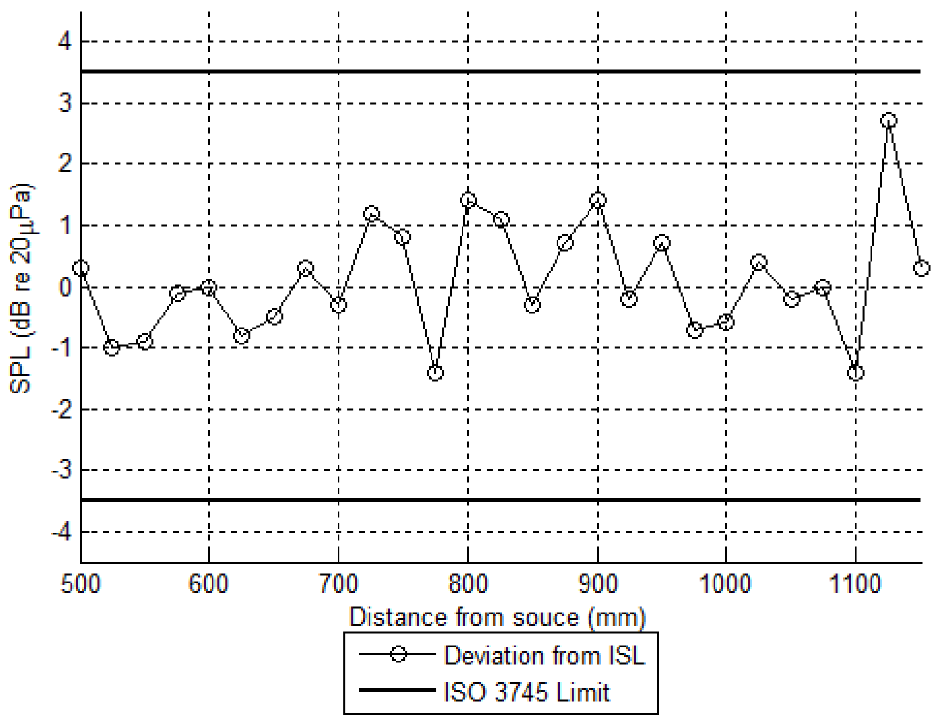

Figure 43.—North Horizontal Wall Traverse High Frequency, 12,500 Hz, Pure Tones

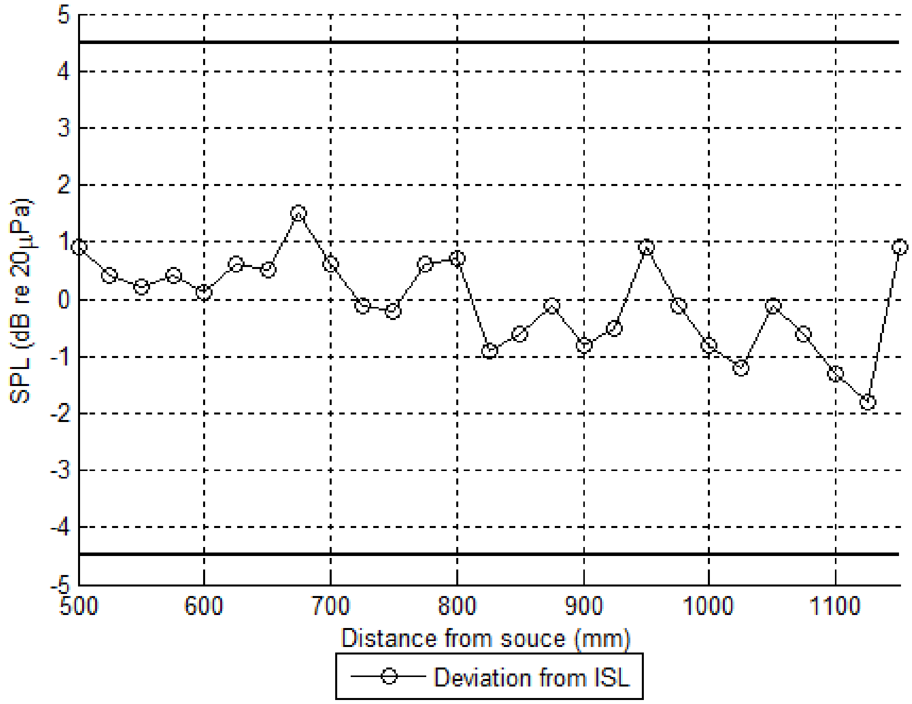

Figure 44.—North Horizontal Wall Traverse High Frequency, 16,000 Hz, Pure Tones

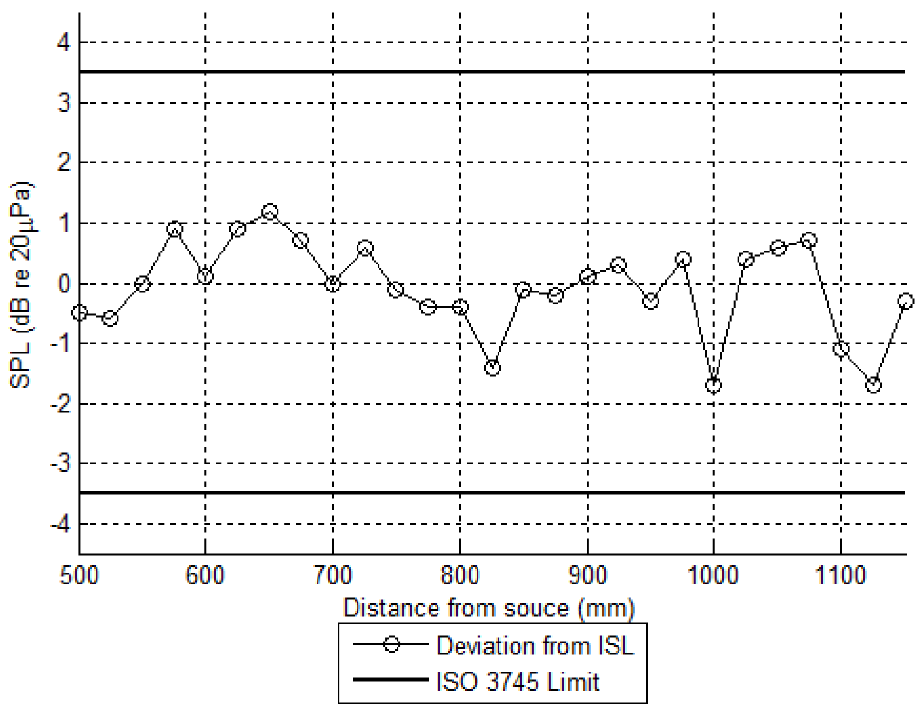

Figure 45.—North Horizontal Wall Traverse High Frequency, 20,000 Hz, Pure Tones

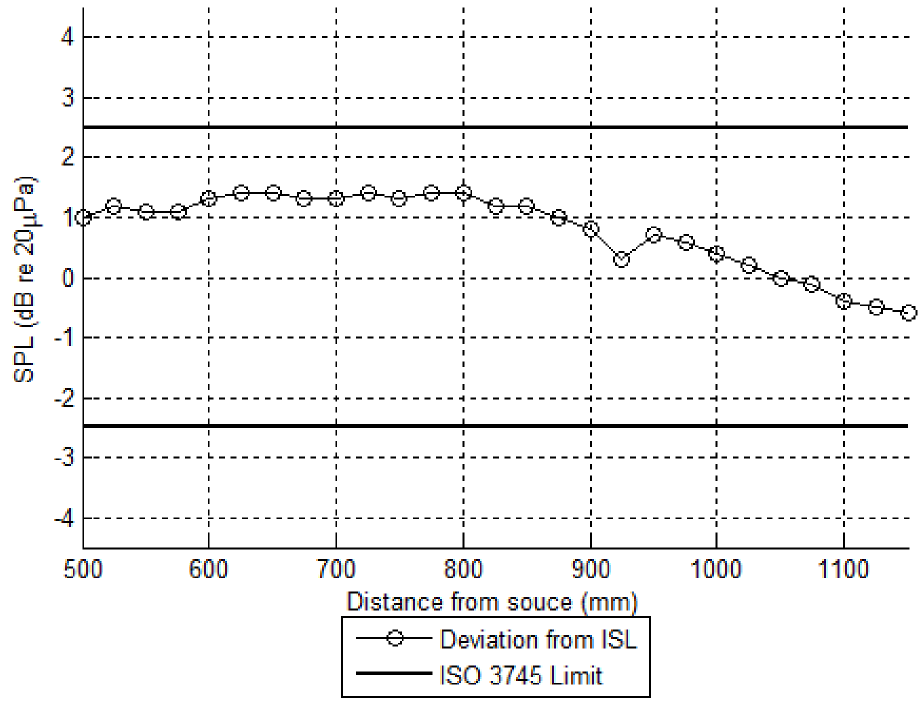

Figure 46.—North Upper Dihedral Traverse Mid Frequency-High Frequency, 160 Hz, Pure Tones

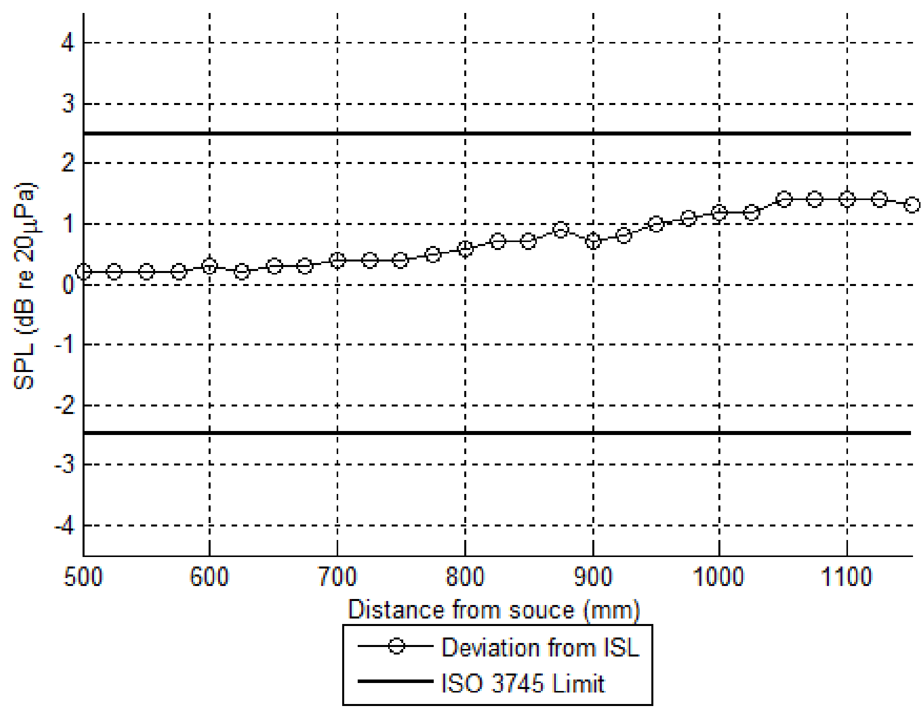

Figure 47.—North Upper Dihedral Traverse Mid Frequency-High Frequency, 200 Hz, Pure Tones

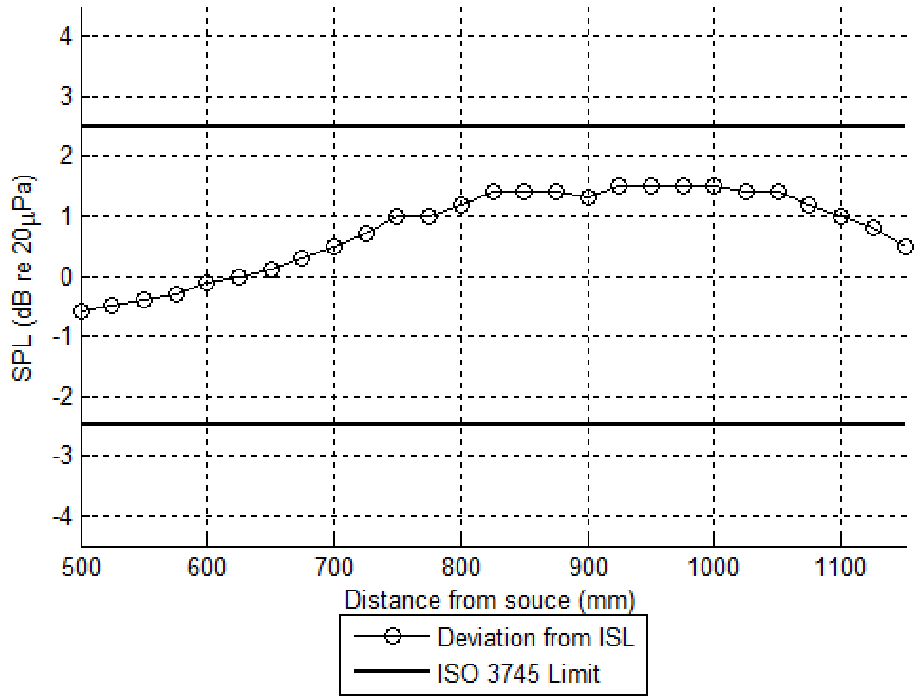

Figure 48.—North Upper Dihedral Traverse Mid Frequency-High Frequency, 250 Hz, Pure Tones

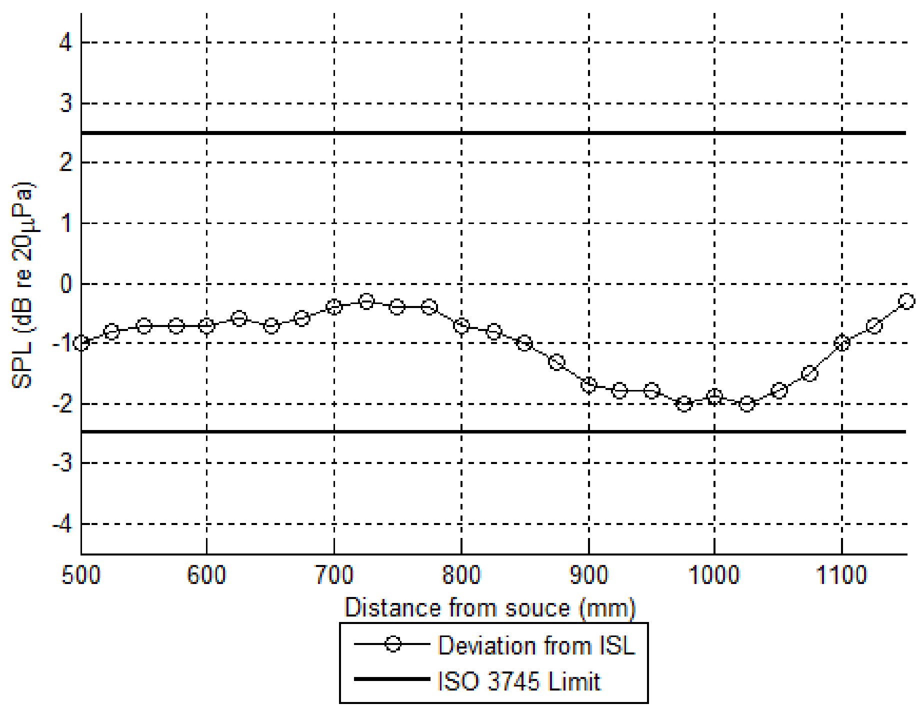

Figure 49.—North Upper Dihedral Traverse Mid Frequency-High Frequency, 315 Hz, Pure Tones

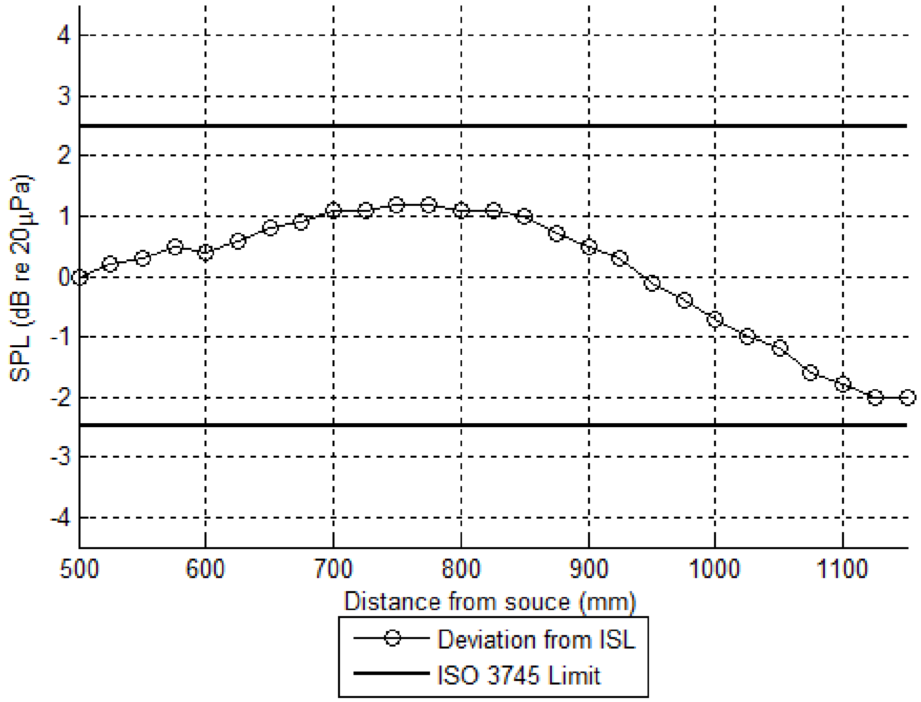

Figure 50.—North Upper Dihedral Traverse Mid Frequency-High Frequency, 400 Hz, Pure Tones

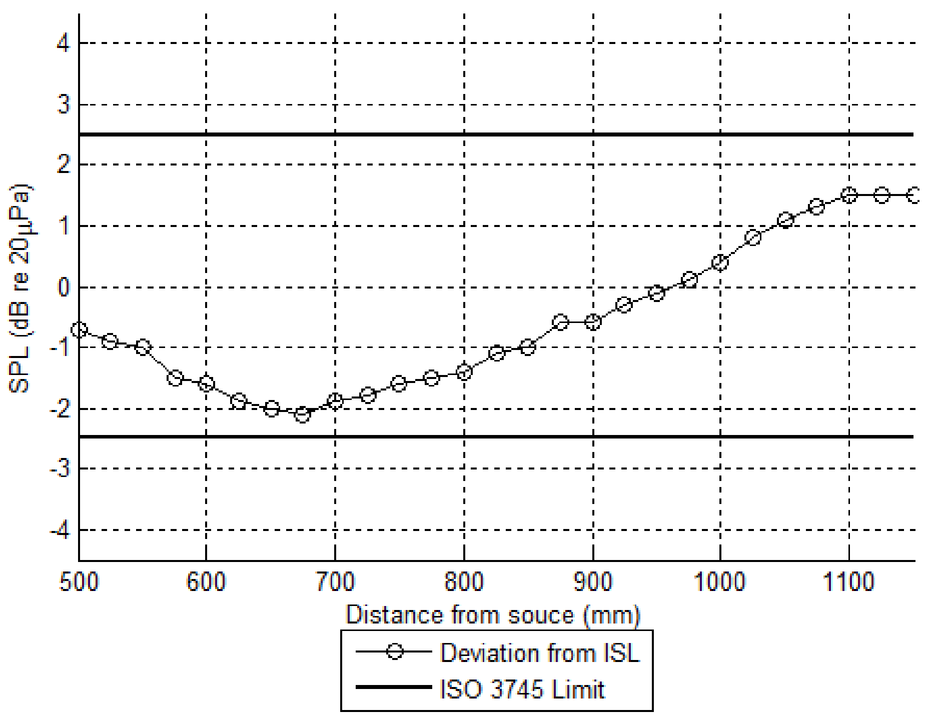

Figure 51.—North Upper Dihedral Traverse Mid Frequency-High Frequency, 500 Hz, Pure Tones

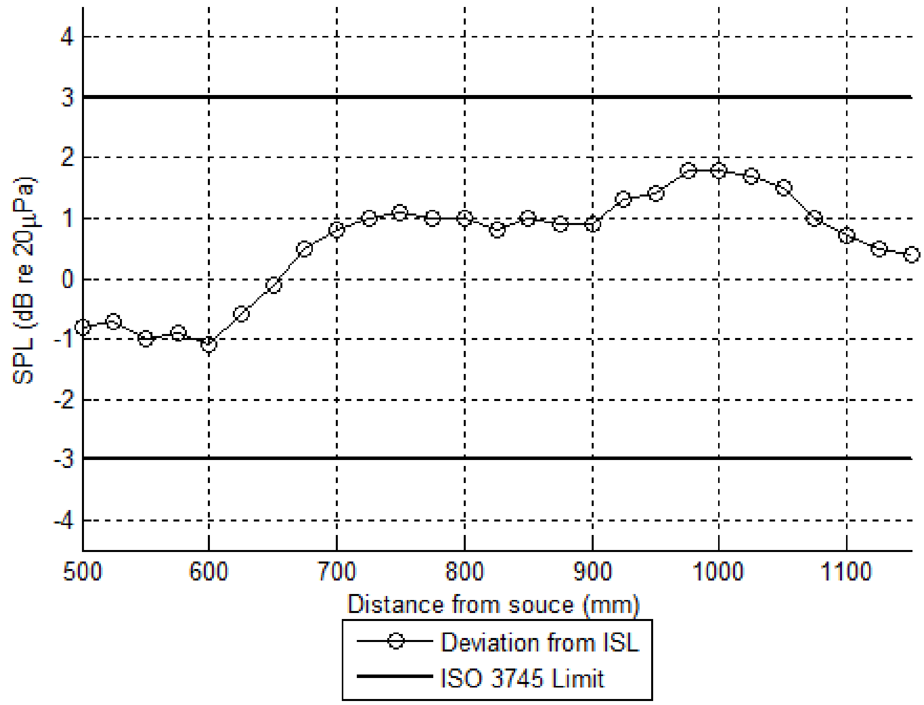

Figure 52.—North Upper Dihedral Traverse Mid Frequency-High Frequency, 630 Hz, Pure Tones

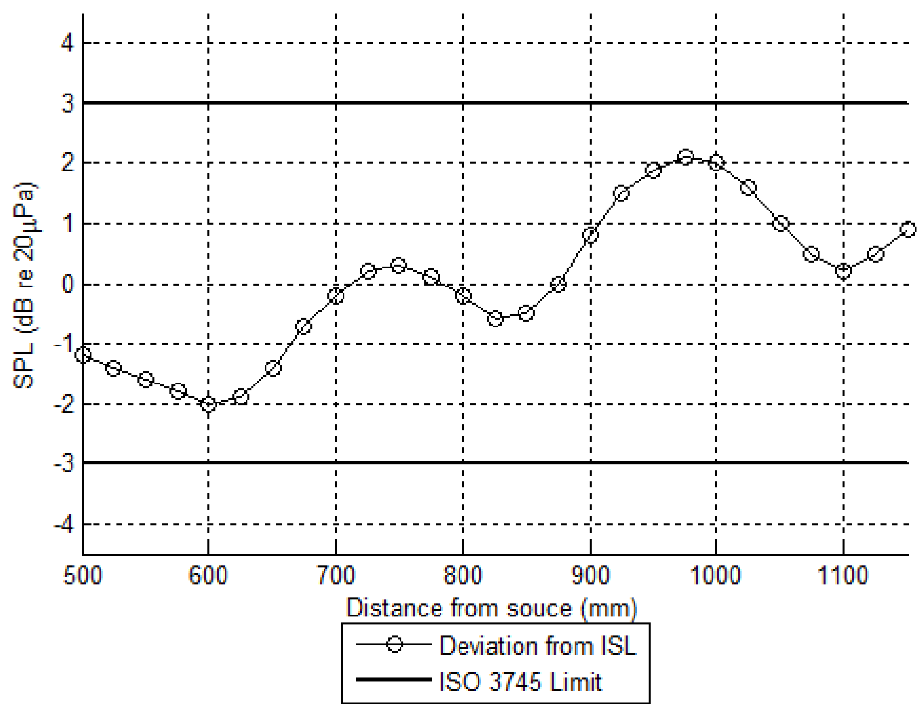

Figure 53.—North Upper Dihedral Traverse Mid Frequency-High Frequency, 800 Hz, Pure Tones

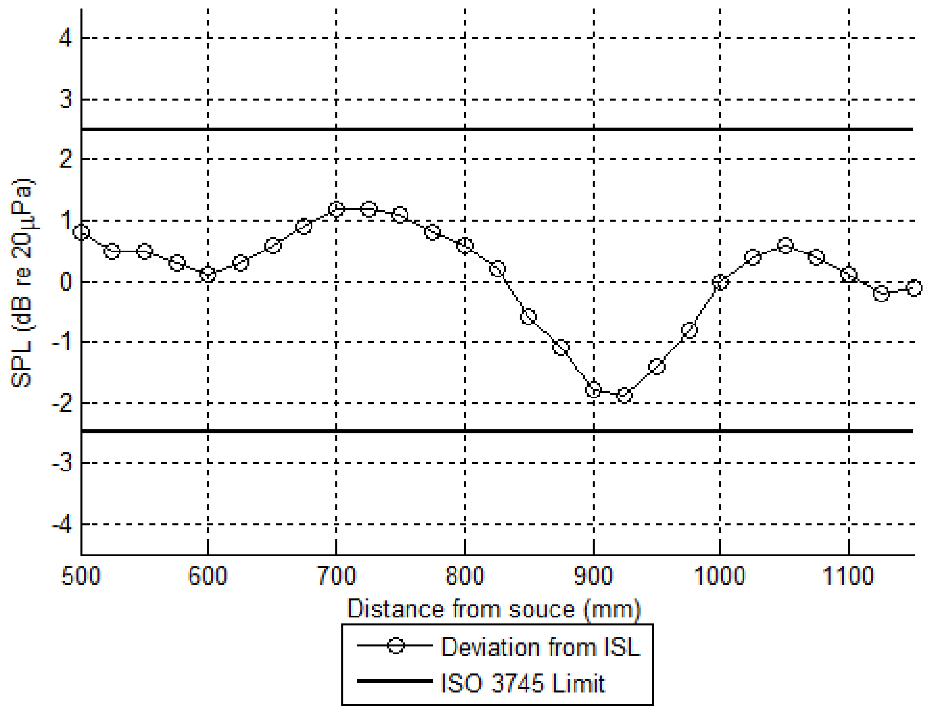

Figure 54.—North Upper Dihedral Traverse Mid Frequency-High Frequency, 1,000 Hz, Pure Tones

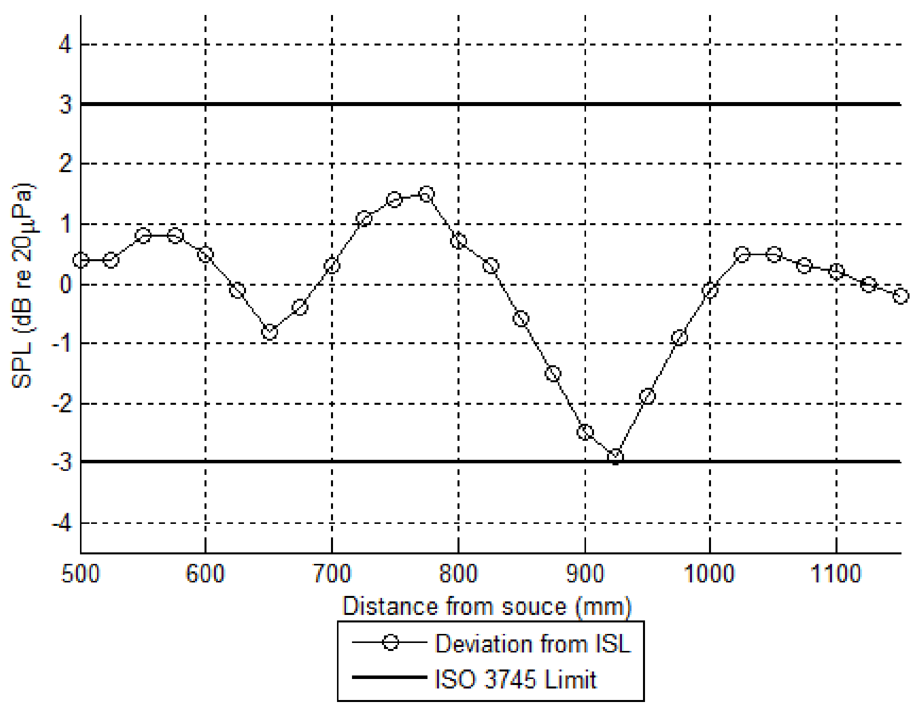

Figure 55.—North Upper Dihedral Traverse Mid Frequency-High Frequency, 1,250 Hz, Pure Tones

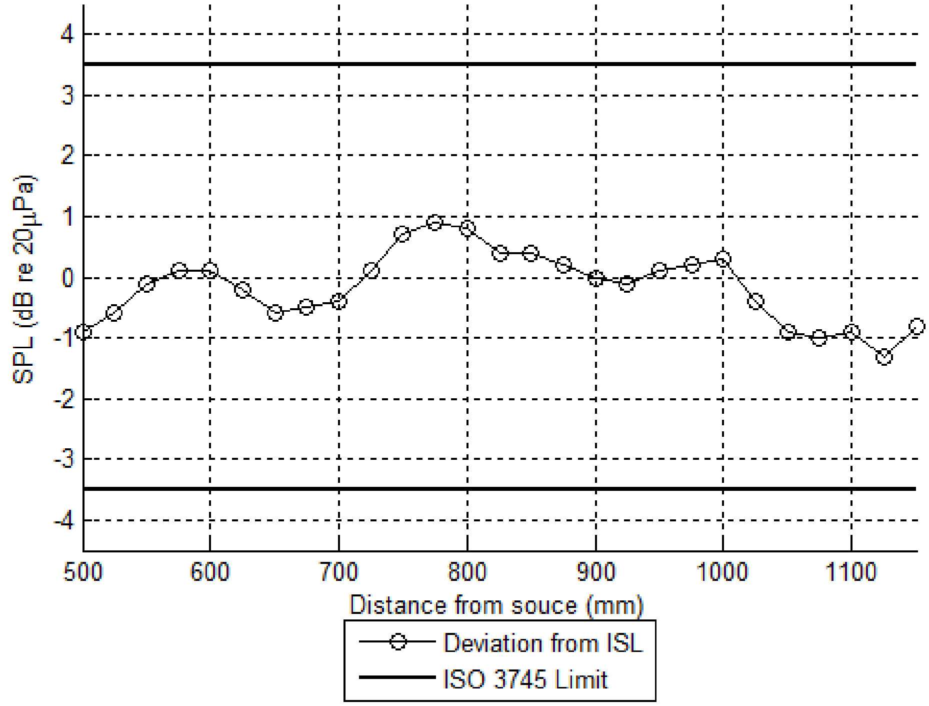

Figure 56.—North Upper Dihedral Traverse Mid Frequency-High Frequency, 1,600 Hz, Pure Tones

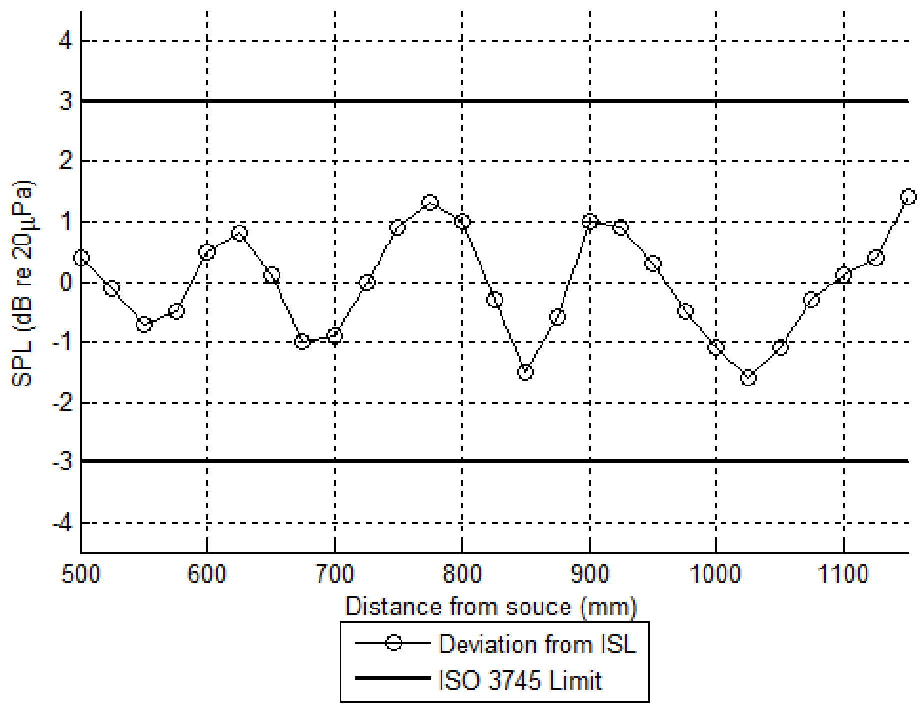

Figure 57.—North Upper Dihedral Traverse Mid Frequency-High Frequency, 2,000 Hz, Pure Tones

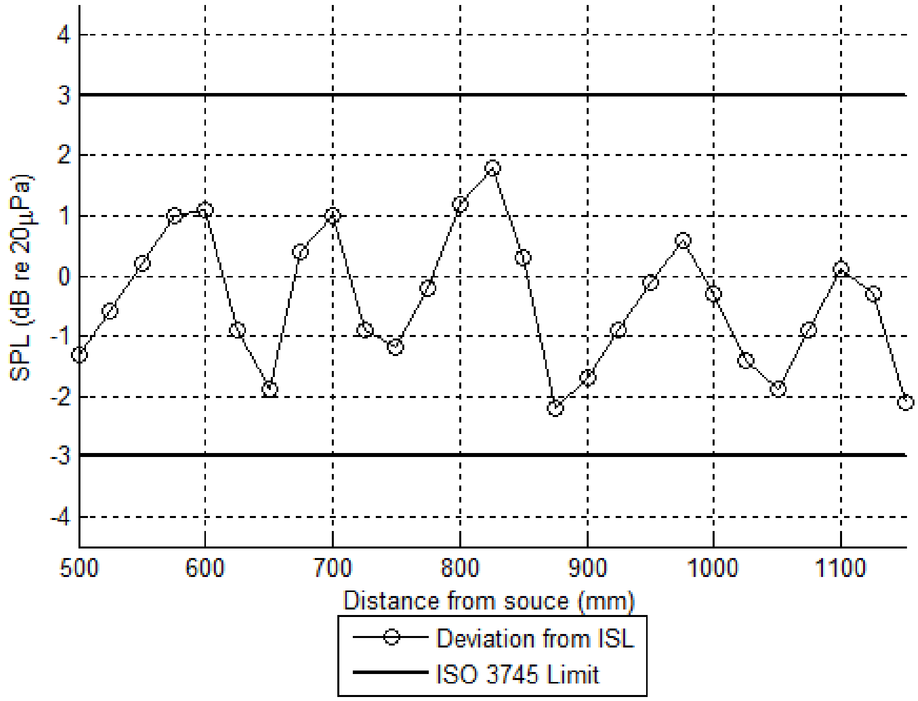

Figure 58.—North Upper Dihedral Traverse Mid Frequency-High Frequency, 2,500 Hz, Pure Tones

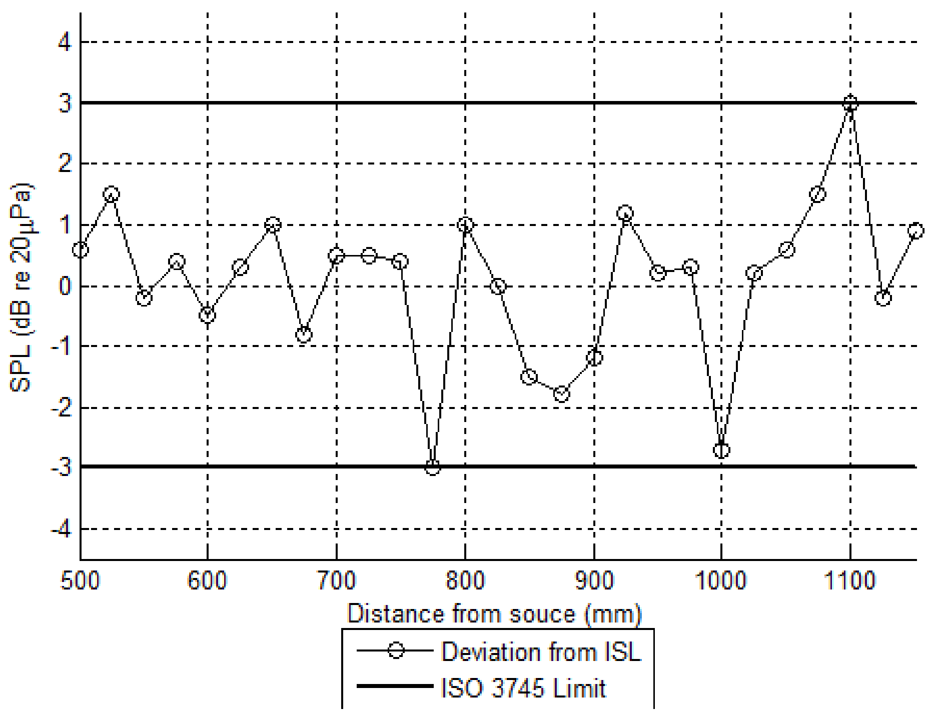

Figure 59.—North Upper Dihedral Traverse Mid Frequency-High Frequency, 3,150 Hz, Pure Tones

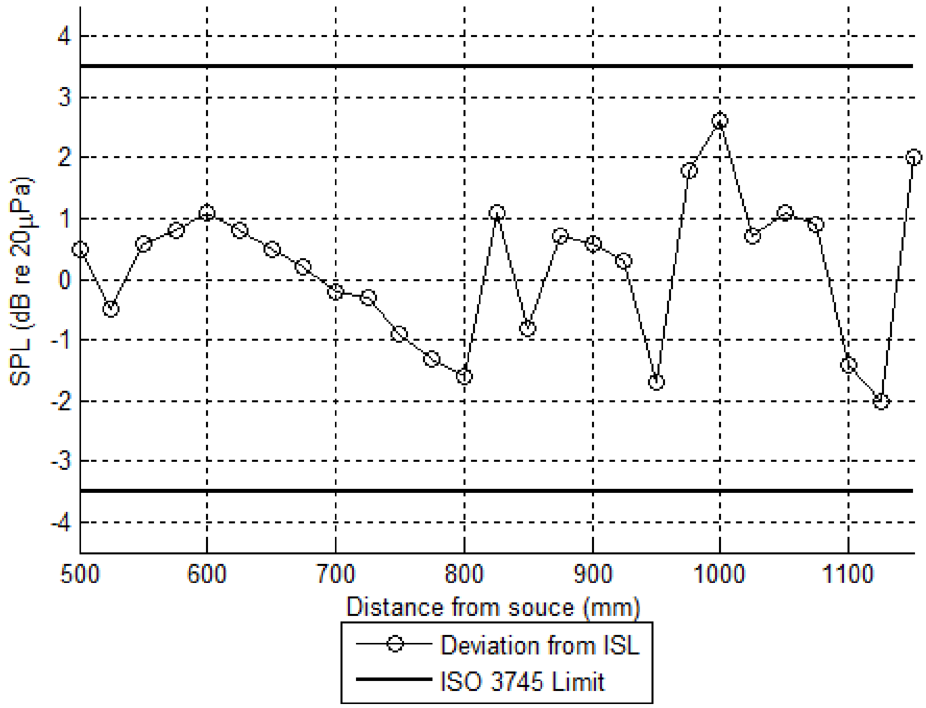

Figure 60.—North Upper Dihedral Traverse Mid Frequency-High Frequency, 4,000 Hz, Pure Tones

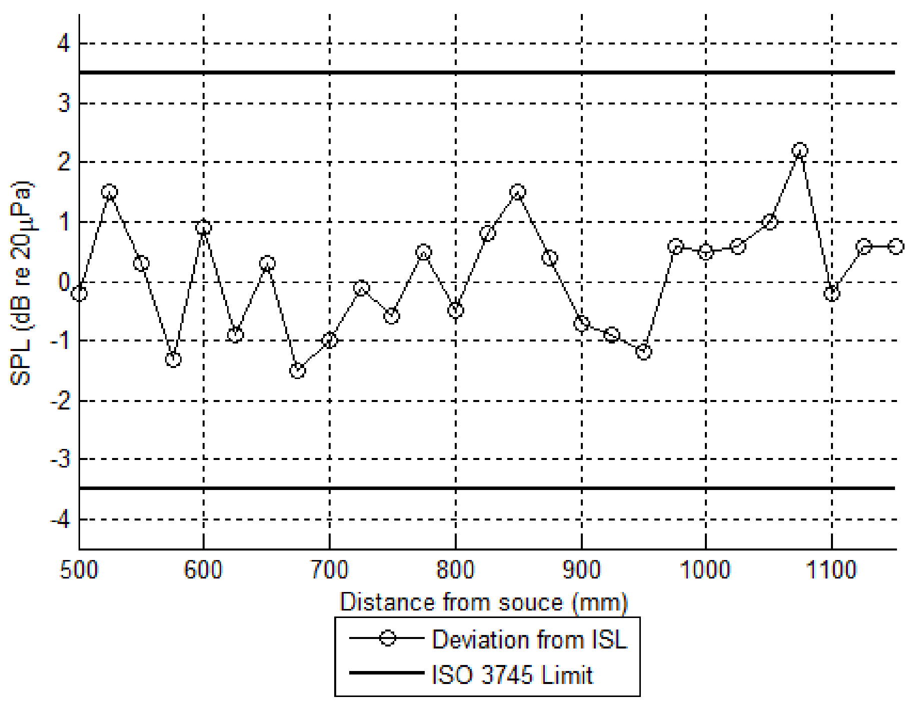

Figure 61.—North Upper Dihedral Traverse Mid Frequency-High Frequency, 5,000 Hz, Pure Tones

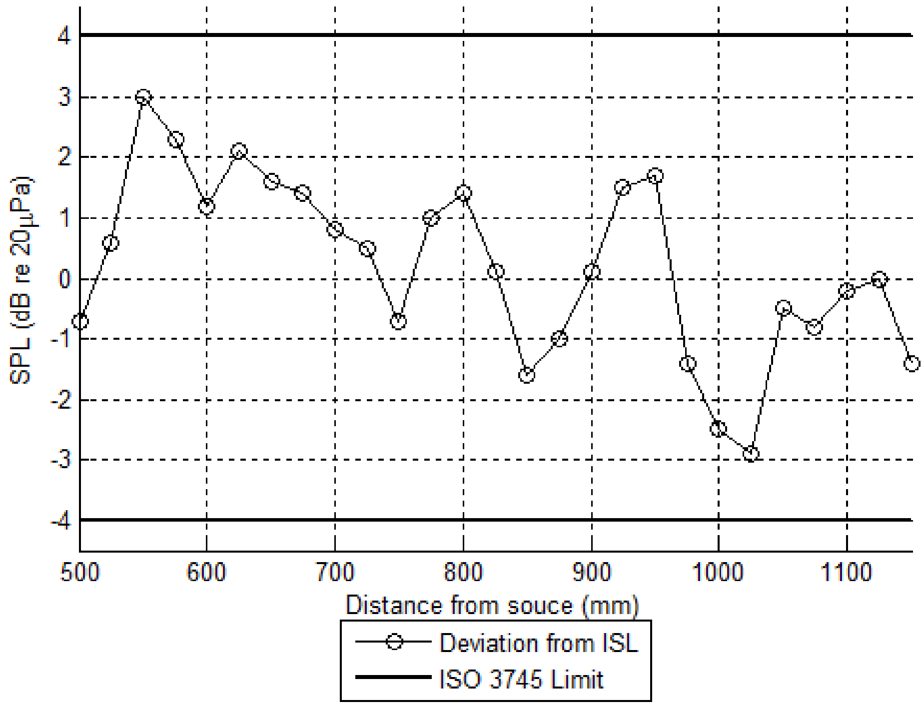

Figure 62.—North Upper Dihedral Traverse Mid Frequency-High Frequency, 6,300 Hz, Pure Tones

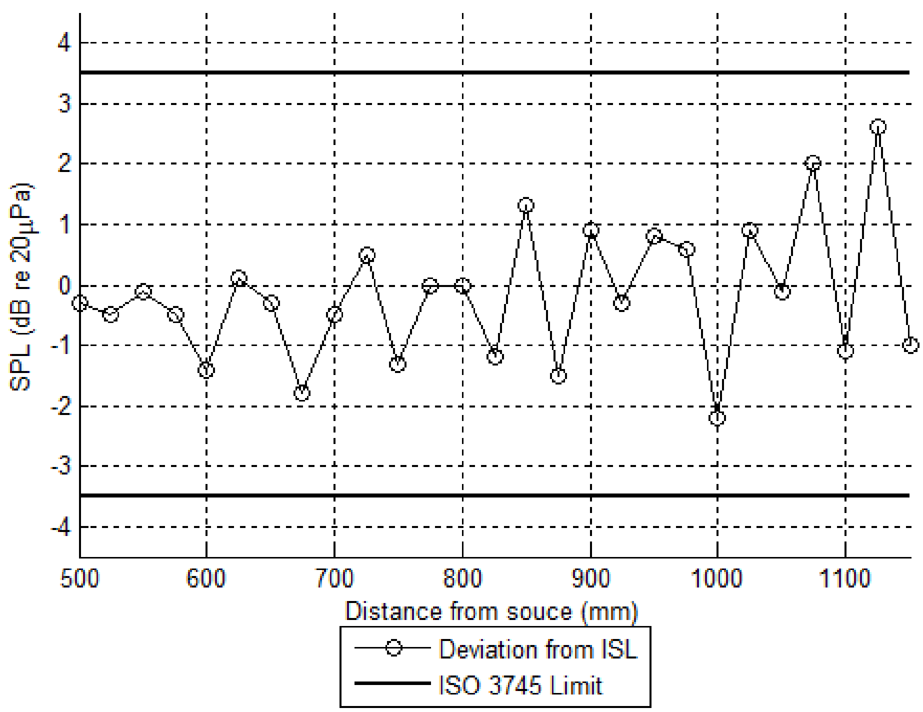

Figure 63.—North Upper Dihedral Traverse Mid Frequency-High Frequency, 8,000 Hz, Pure Tones

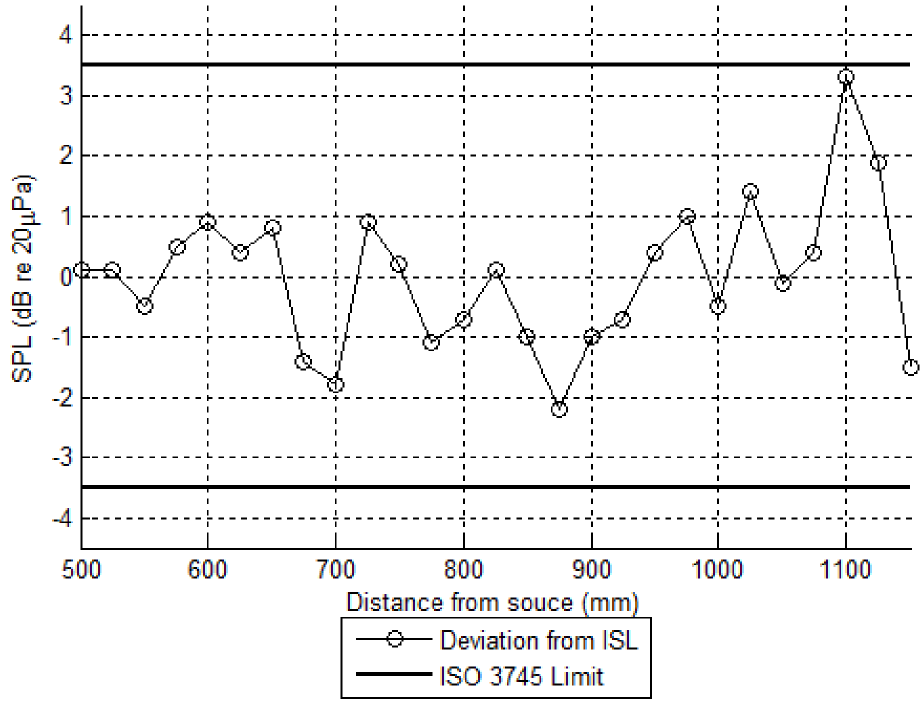

Figure 64.—North Upper Dihedral Traverse Mid Frequency-High Frequency, 10,000 Hz, Pure Tones

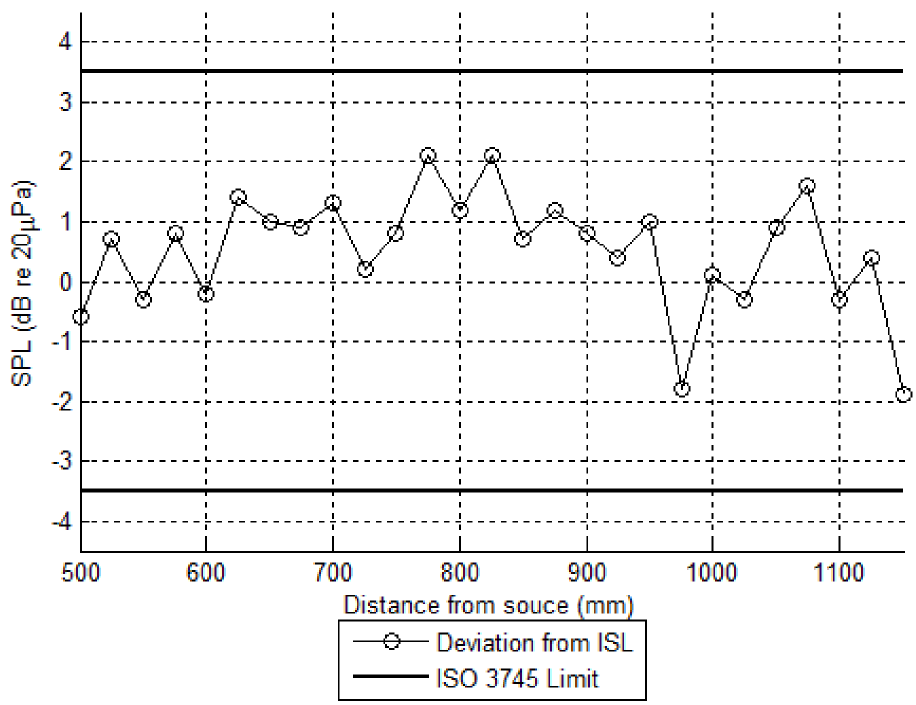

Figure 65.—North Upper Dihedral Traverse Mid Frequency-M Frequency, 12,500 Hz, Pure Tones

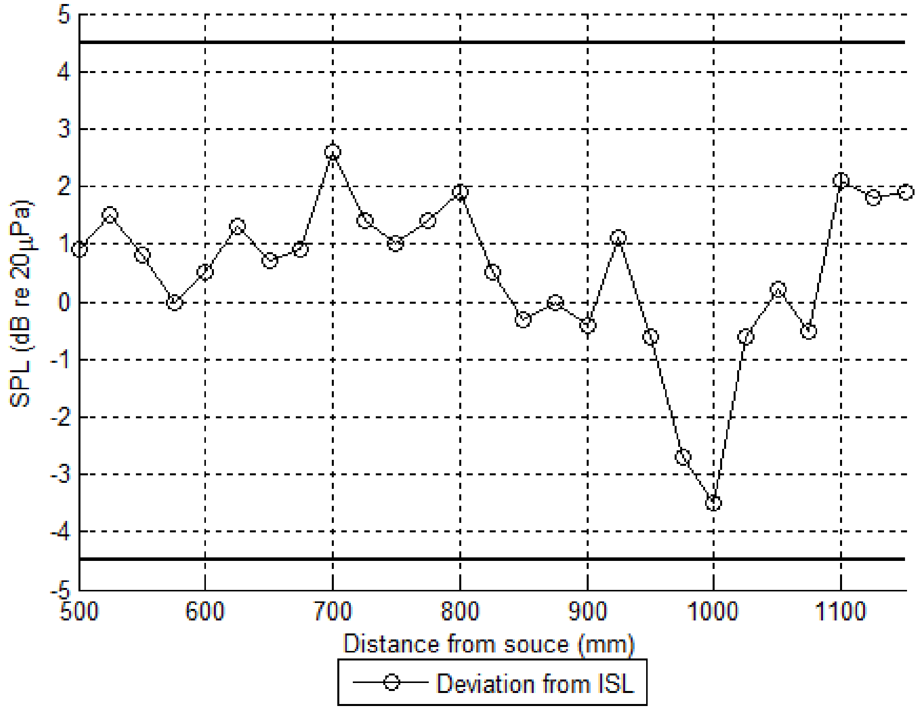

Figure 66.—North Upper Dihedral Traverse Mid Frequency-High Frequency, 16,000 Hz, Pure Tones

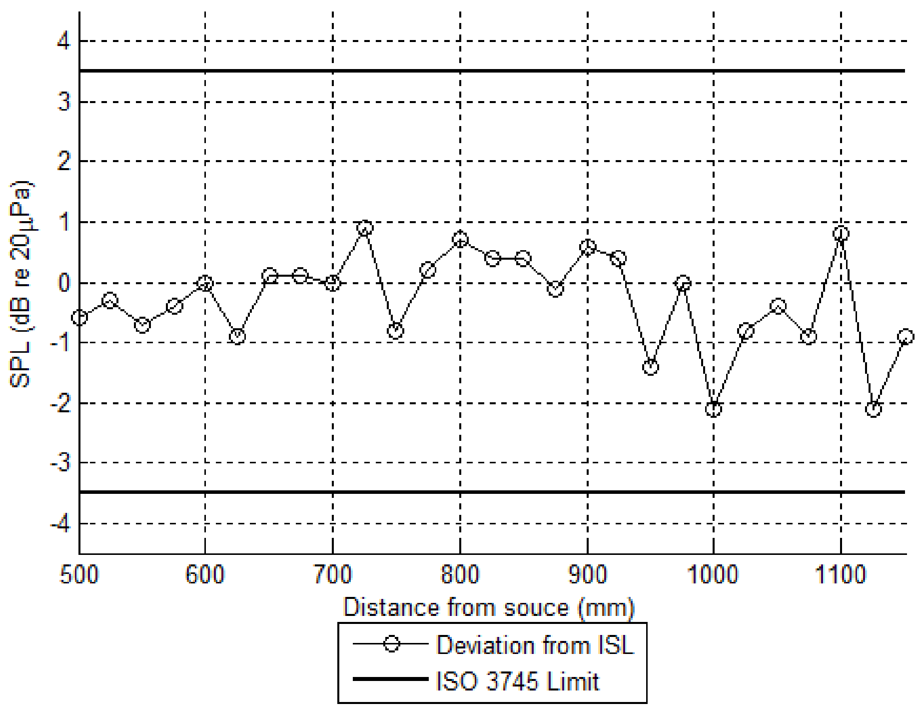

Figure 67.—North Upper Dihedral Traverse Mid Frequency-High Frequency, 20,000 Hz, Pure Tones

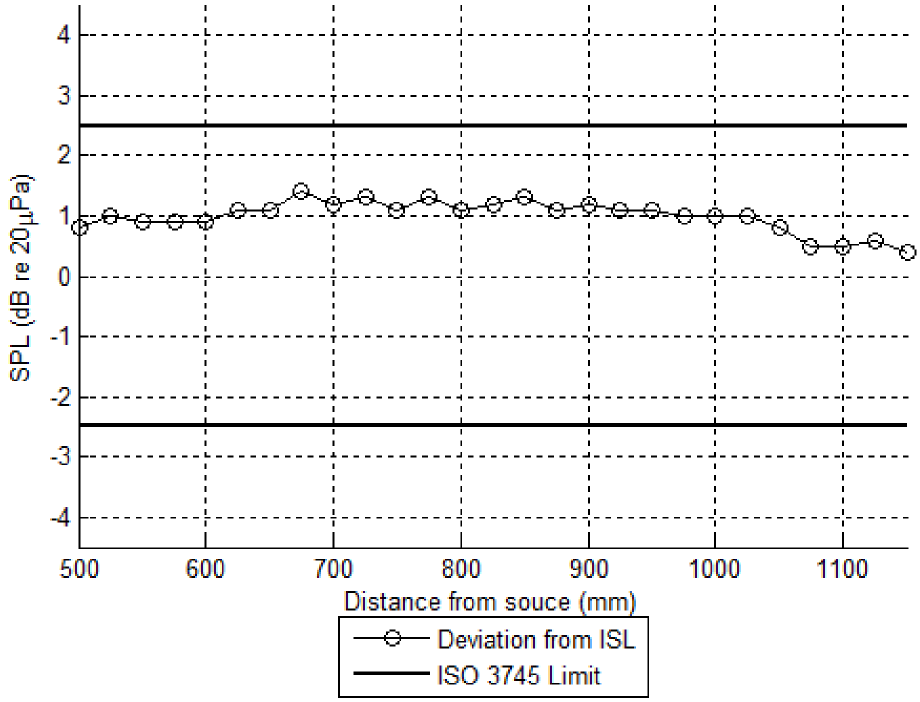

Figure 68.—Northeast Upper Trihedral Traverse Mid Frequency-High Frequency, 160 Hz, Pure Tones

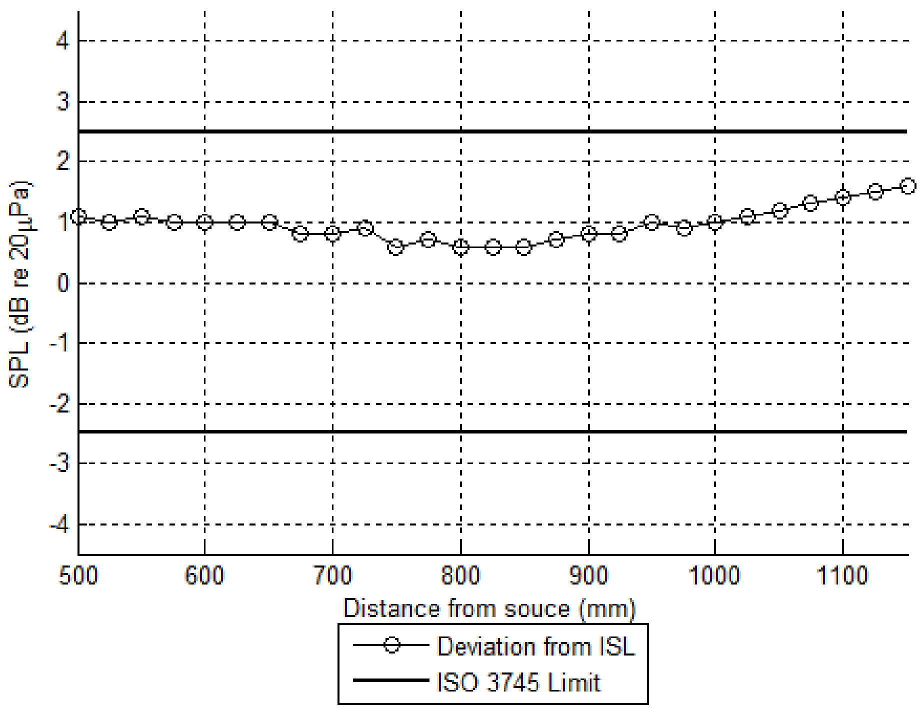

Figure 69.—Northeast Upper Trihedral Traverse Mid Frequency-High Frequency, 200 Hz, Pure Tones

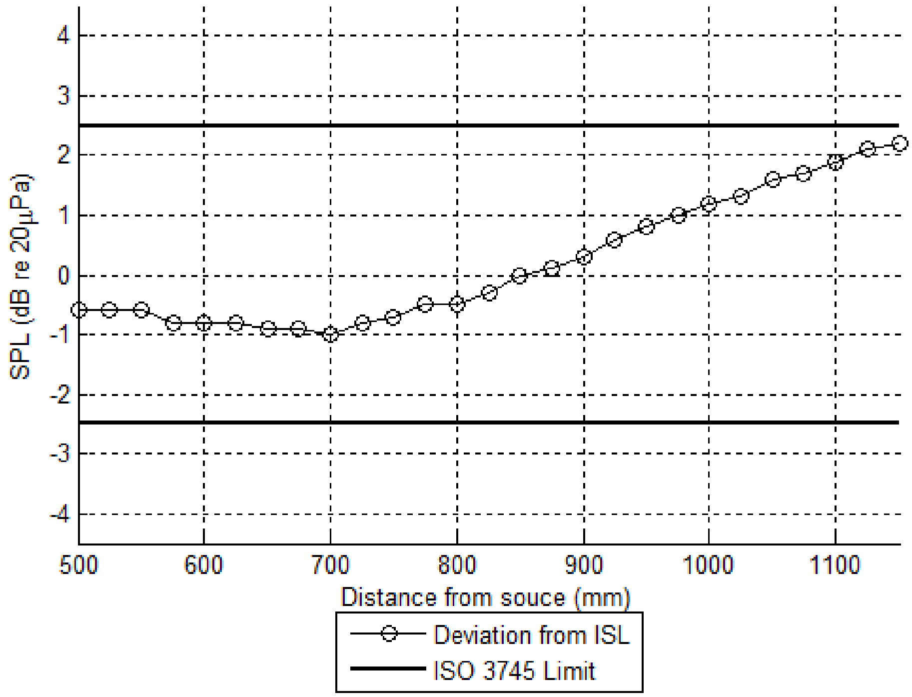

Figure 70.—Northeast Upper Trihedral Traverse Mid Frequency-High Frequency, 250 Hz, Pure Tones

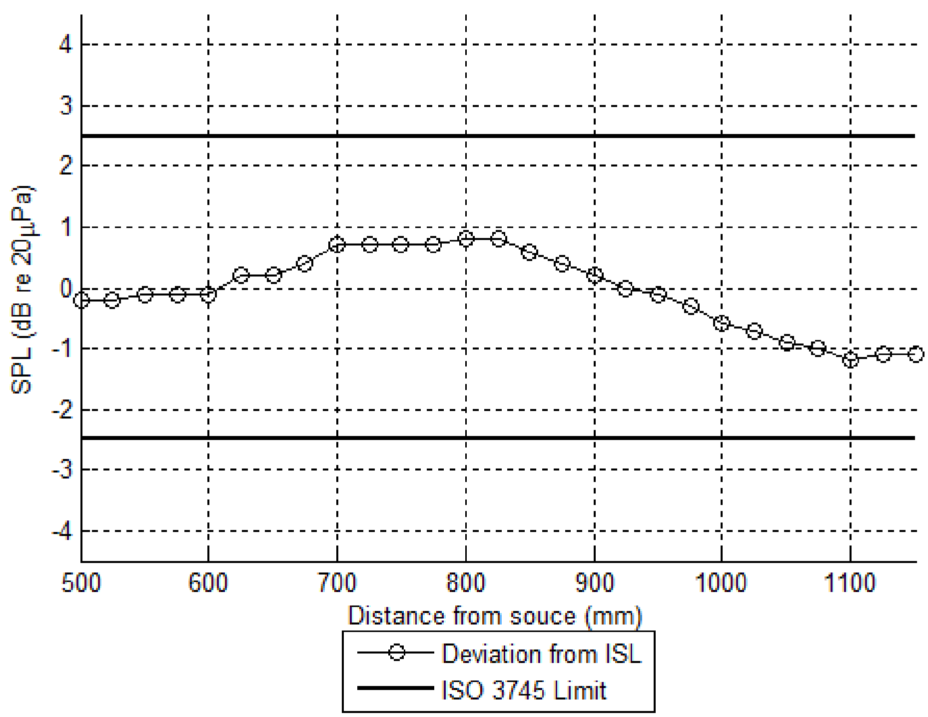

Figure 71.—Northeast Upper Trihedral Traverse Mid Frequency-High Frequency, 315 Hz, Pure Tones

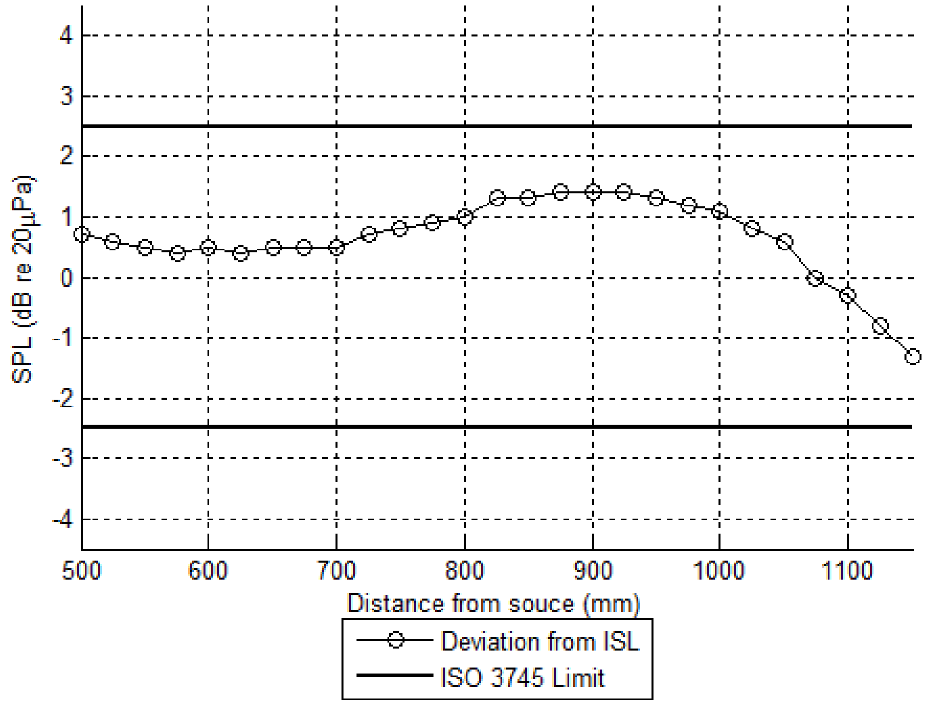

Figure 72.—Northeast Upper Trihedral Traverse Mid Frequency-High Frequency, 400 Hz, Pure Tones

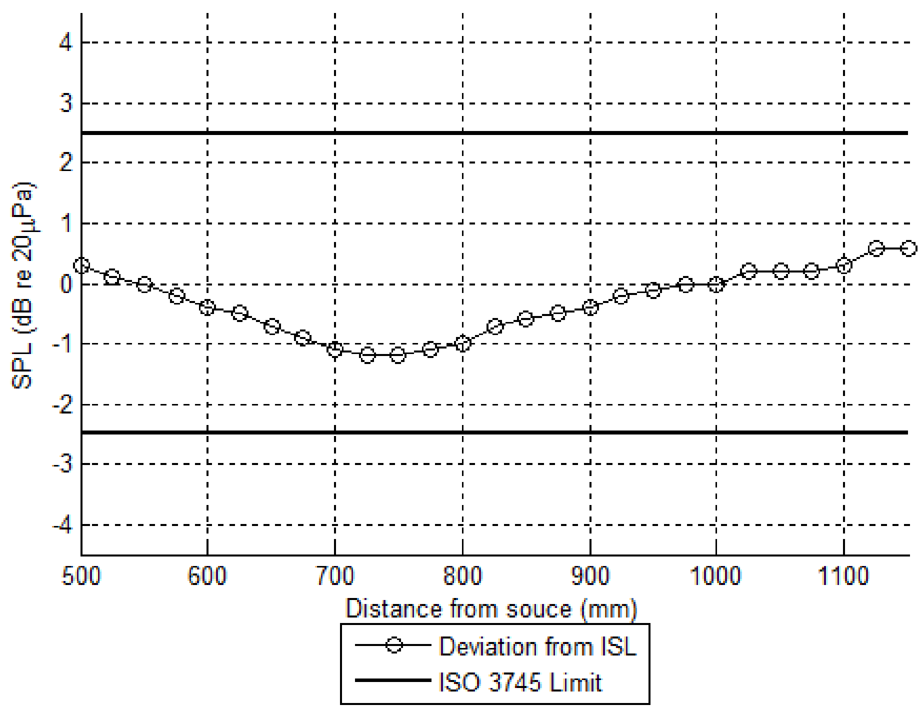

Figure 73.—Northeast Upper Trihedral Traverse Mid Frequency-High Frequency, 500 Hz, Pure Tones

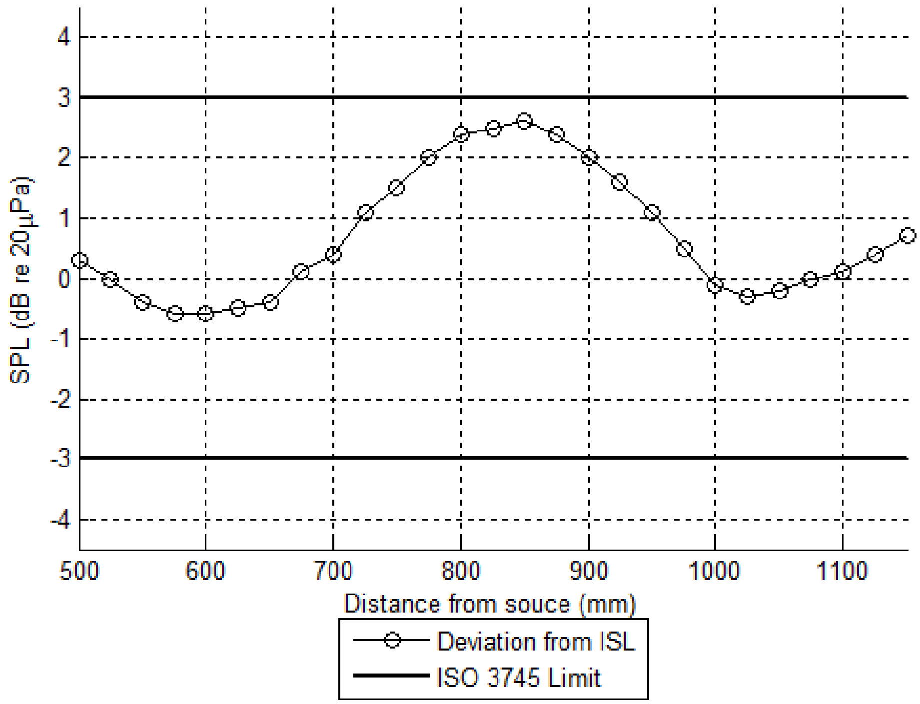

Figure 74.—Northeast Upper Trihedral Traverse Mid Frequency-High Frequency, 630 Hz, Pure Tones

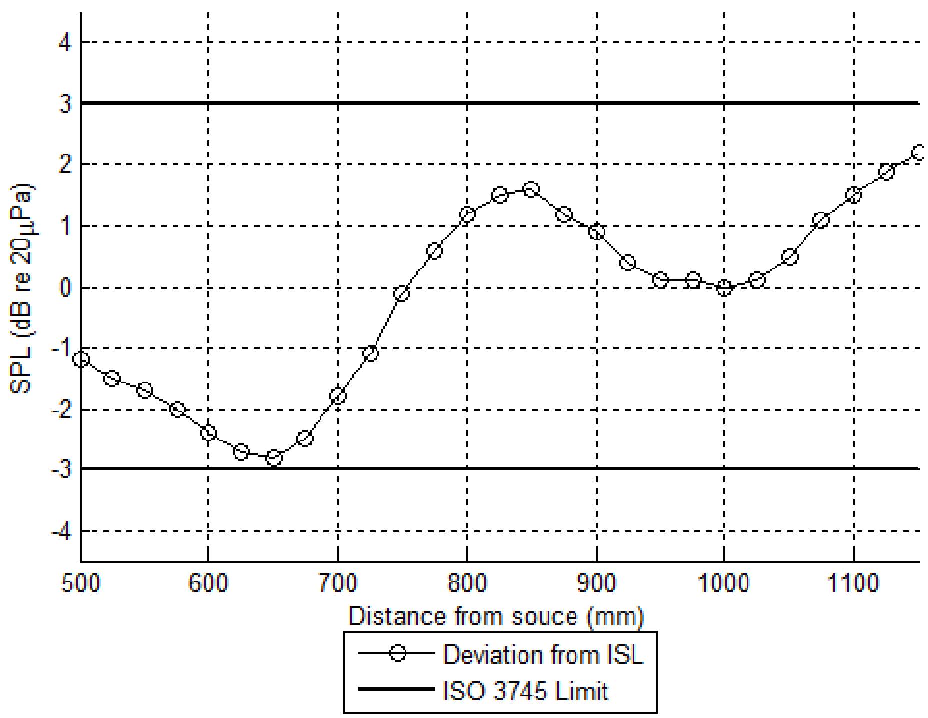

Figure 75.—Northeast Upper Trihedral Traverse Mid Frequency-High Frequency, 800 Hz, Pure Tones

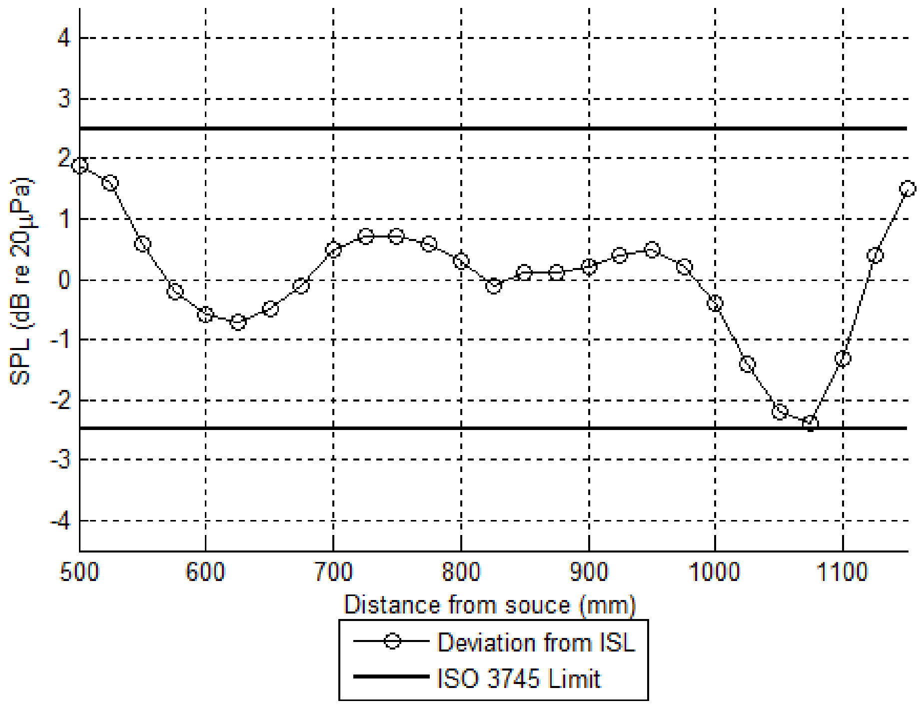

Figure 76.—Northeast Upper Trihedral Traverse Mid Frequency-High Frequency, 1,000 Hz, Pure Tones

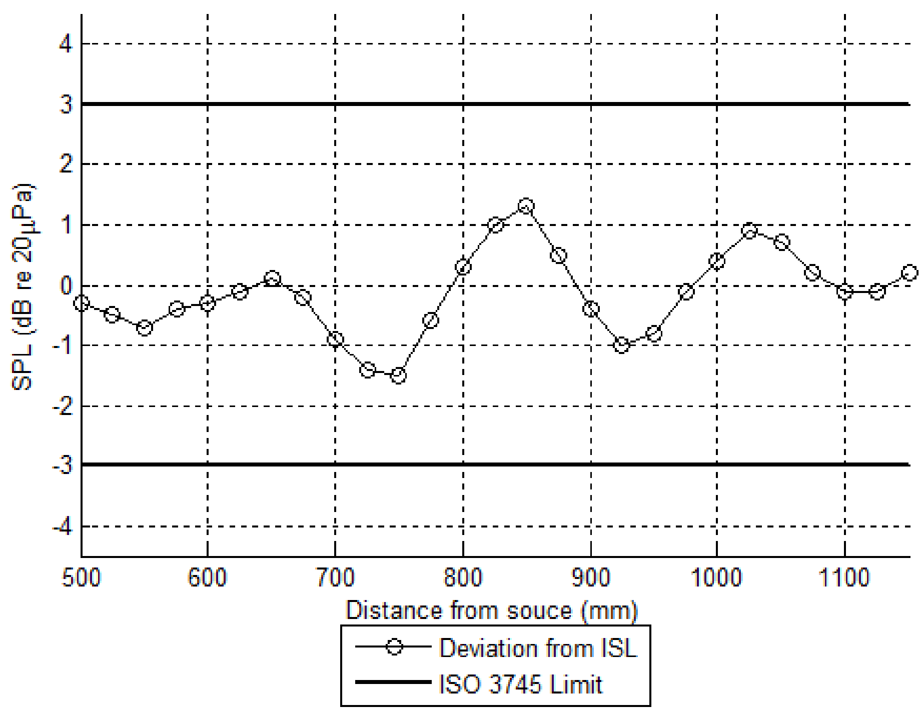

Figure 77.—Northeast Upper Trihedral Traverse Mid Frequency-High Frequency, 1,250 Hz, Pure Tones

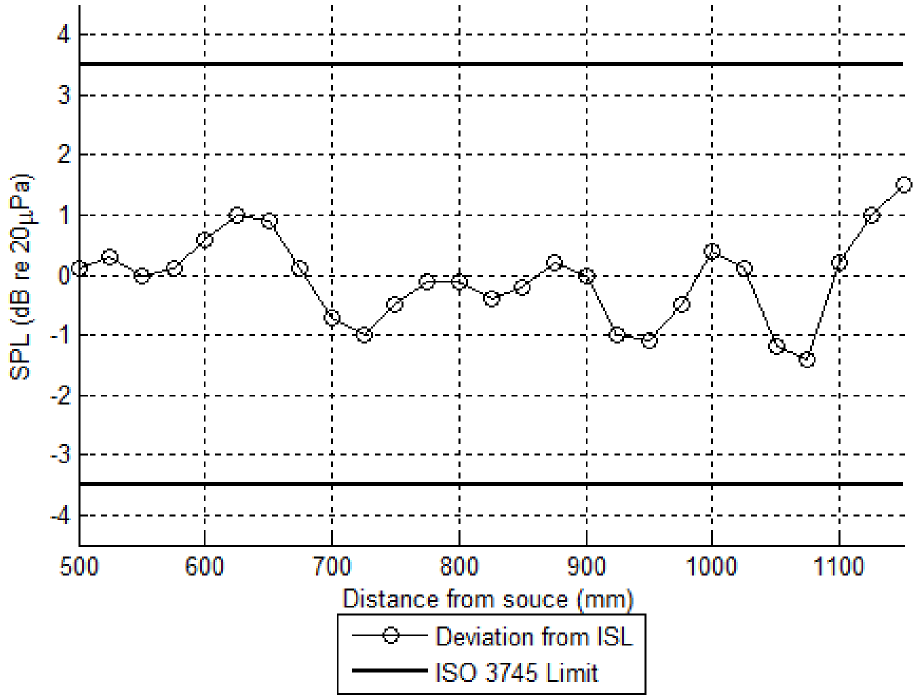

Figure 78.—Northeast Upper Trihedral Traverse Mid Frequency-High Frequency, 1,600 Hz, Pure Tones

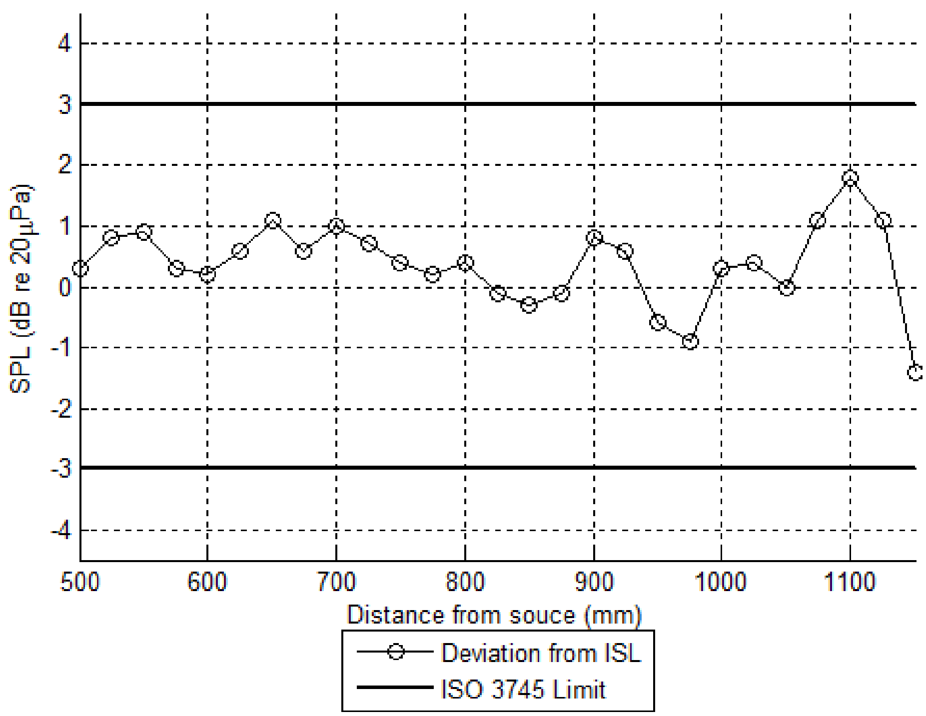

Figure 79.—Northeast Upper Trihedral Traverse Mid Frequency-High Frequency, 2,000 Hz, Pure Tones

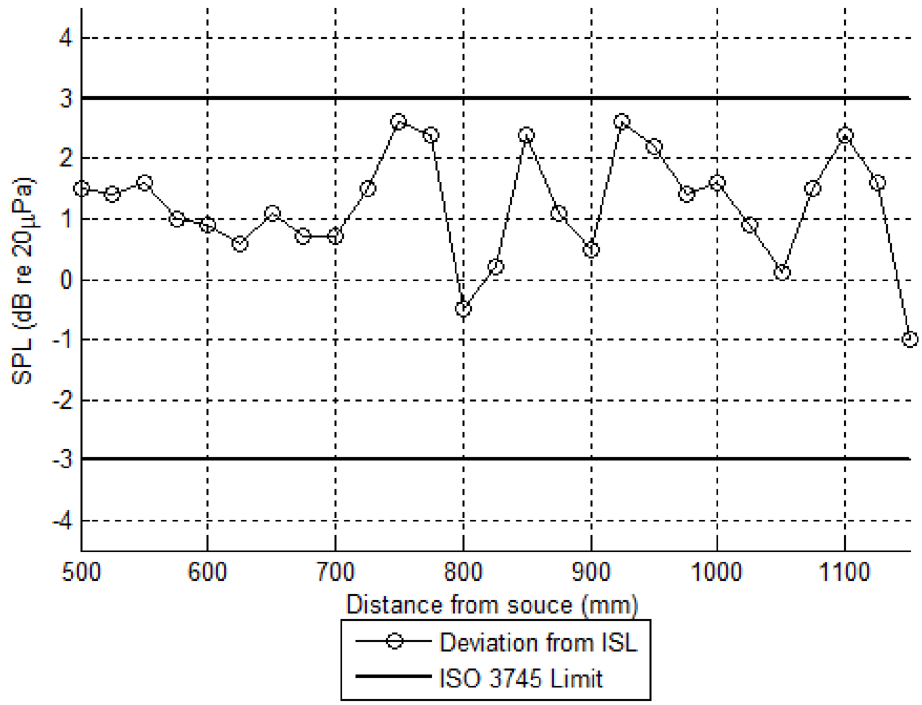

Figure 80.—Northeast Upper Trihedral Traverse Mid Frequency-High Frequency, 2,500 Hz, Pure Tones

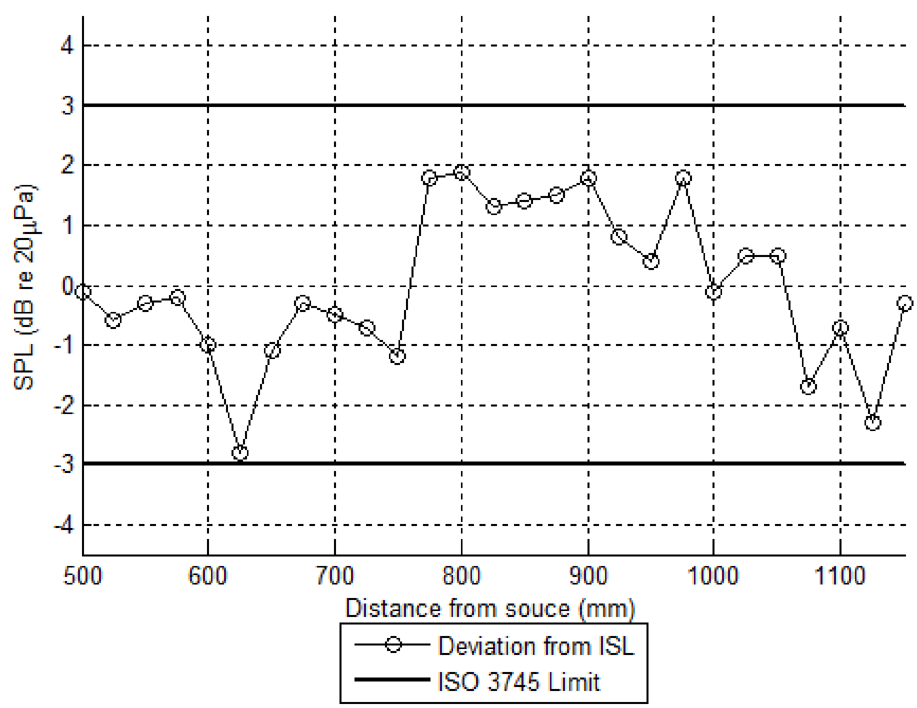

Figure 81.—Northeast Upper Trihedral Traverse Mid Frequency-High Frequency, 3,150 Hz, Pure Tones

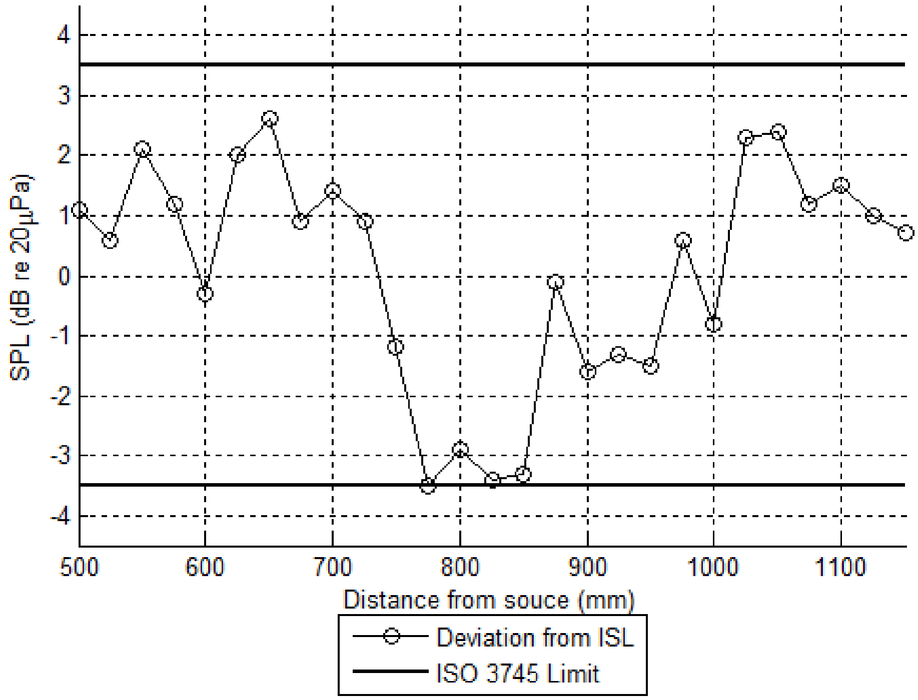

Figure 82.—Northeast Upper Trihedral Traverse Mid Frequency-High Frequency, 4,000 Hz, Pure Tones

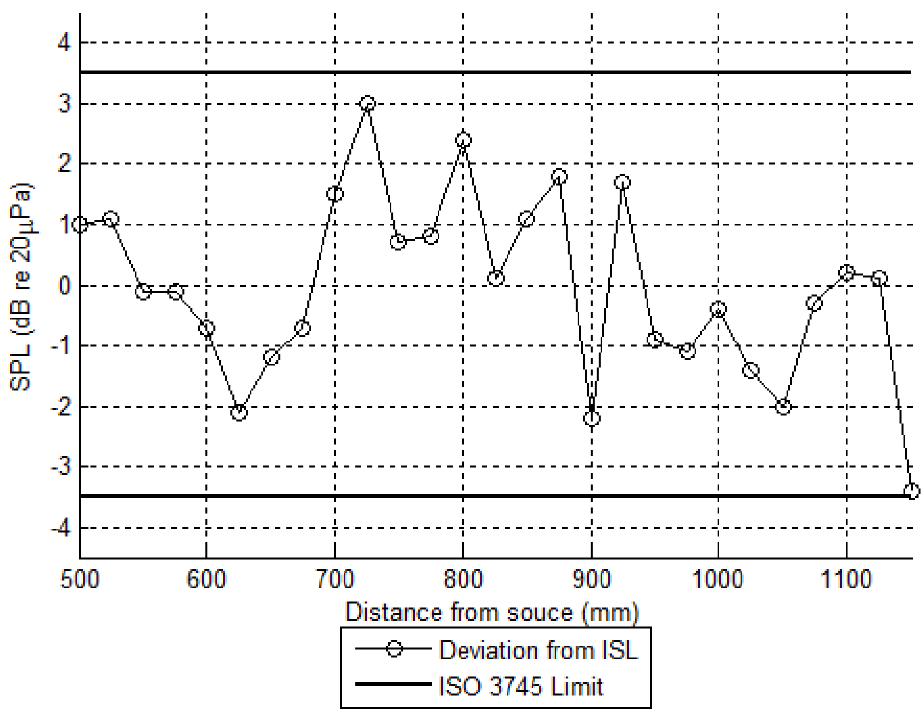

Figure 83.—Northeast Upper Trihedral Traverse Mid Frequency-High Frequency, 5,000 Hz, Pure Tones

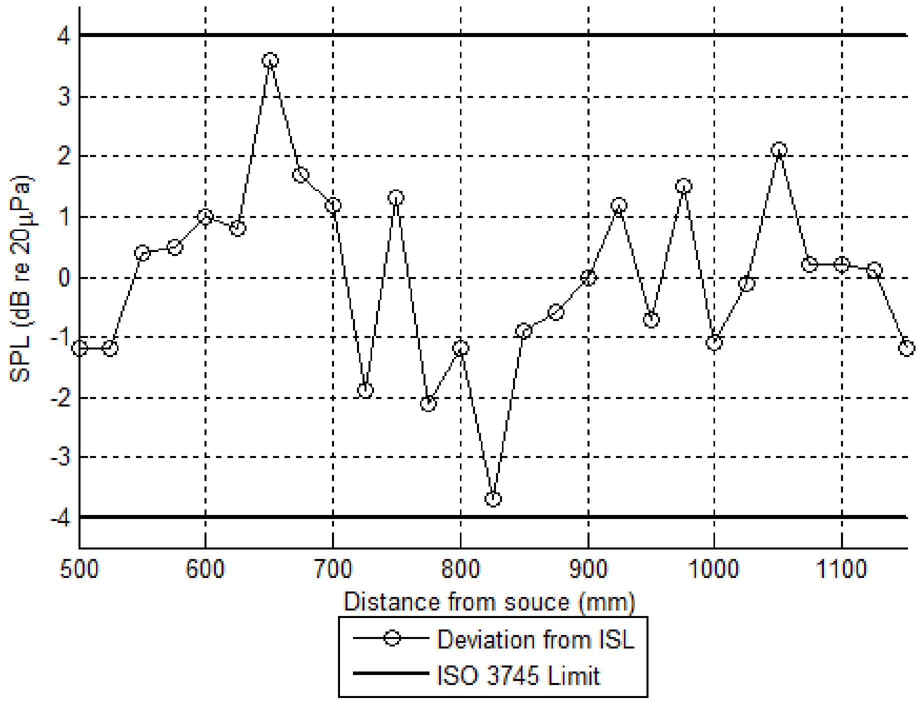

Figure 84.—Northeast Upper Trihedral Traverse Mid Frequency-High Frequency, 6,300 Hz, Pure Tones

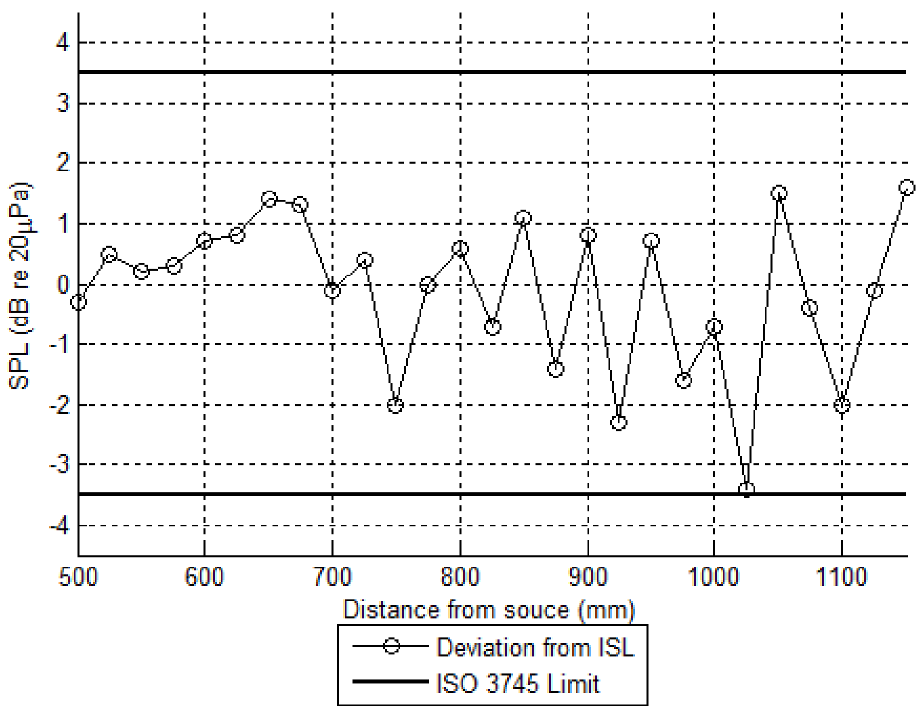

Figure 85.—Northeast Upper Trihedral Traverse Mid Frequency-High Frequency, 8,000 Hz, Pure Tones

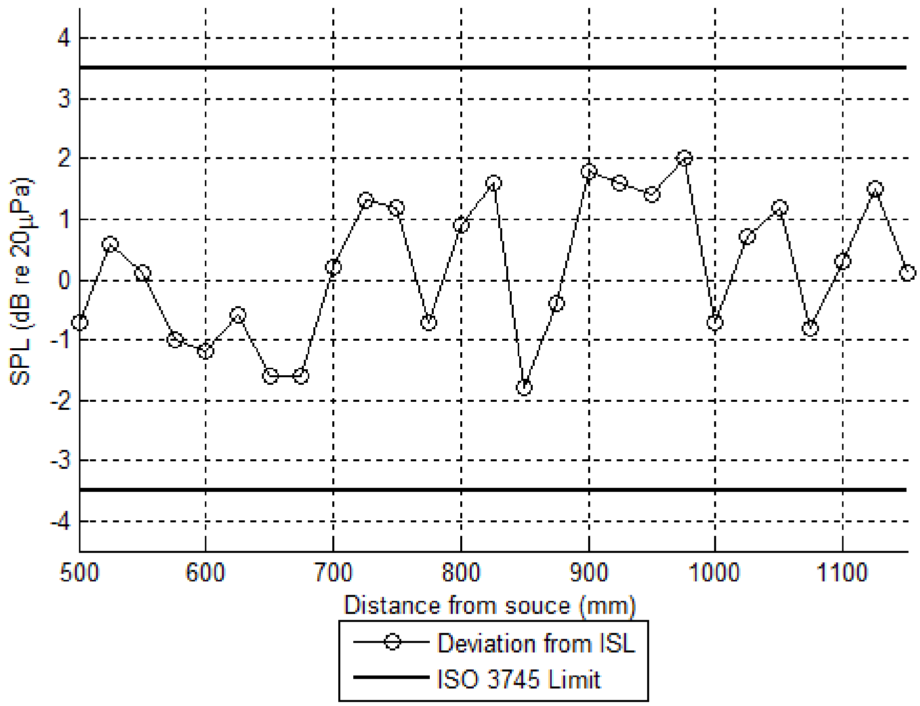

Figure 86.—Northeast Upper Trihedral Traverse Mid Frequency-High Frequency, 10,000 Hz, Pure Tones

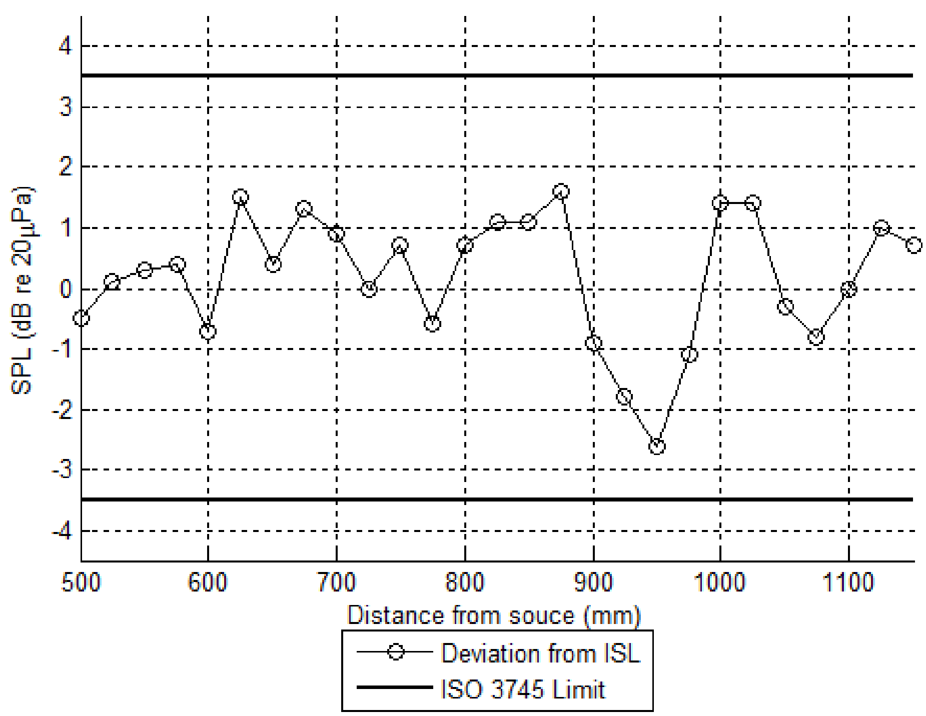

Figure 87.—Northeast Upper Trihedral Traverse Mid Frequency-High Frequency, 12,500 Hz, Pure Tones

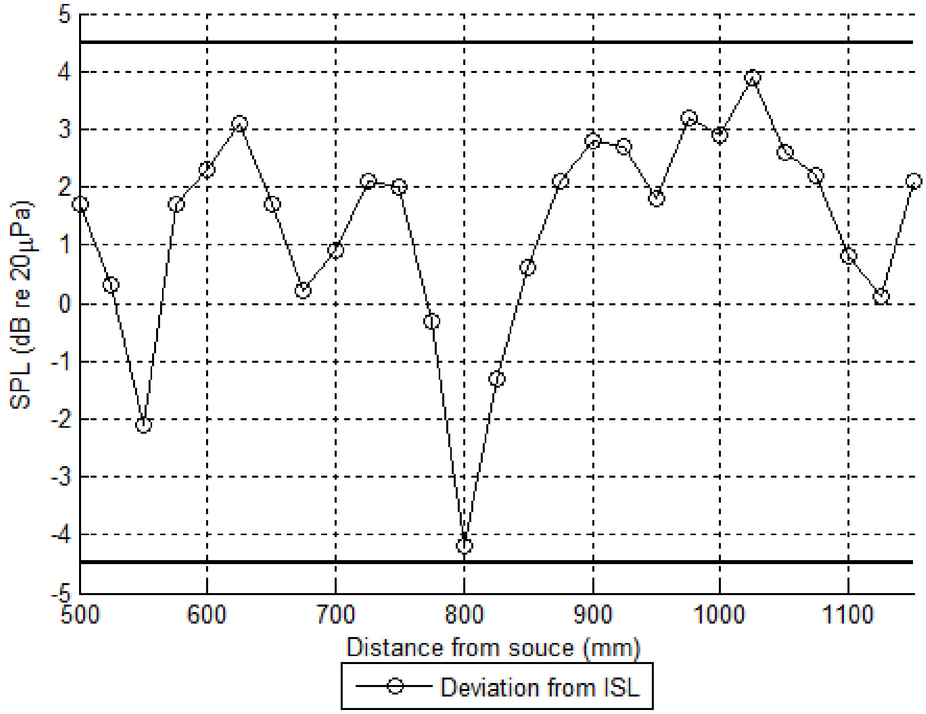

Figure 88.—Northeast Upper Trihedral Traverse Mid Frequency-High Frequency, 16,000 Hz, Pure Tones

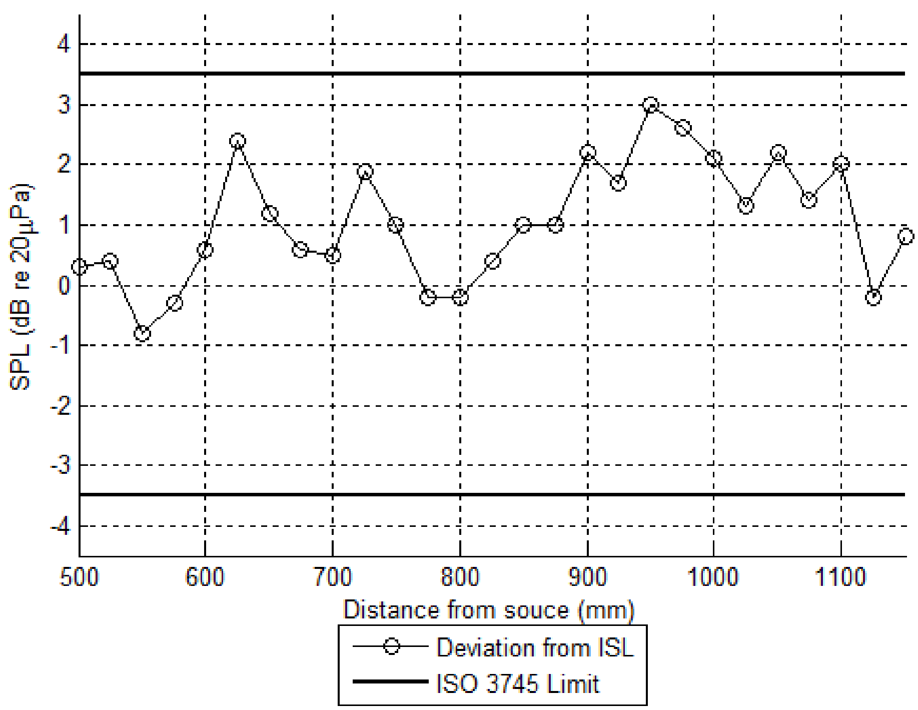

Figure 89.—Northeast Upper Trihedral Traverse Mid Frequency-High Frequency, 20,000 Hz, Pure Tones

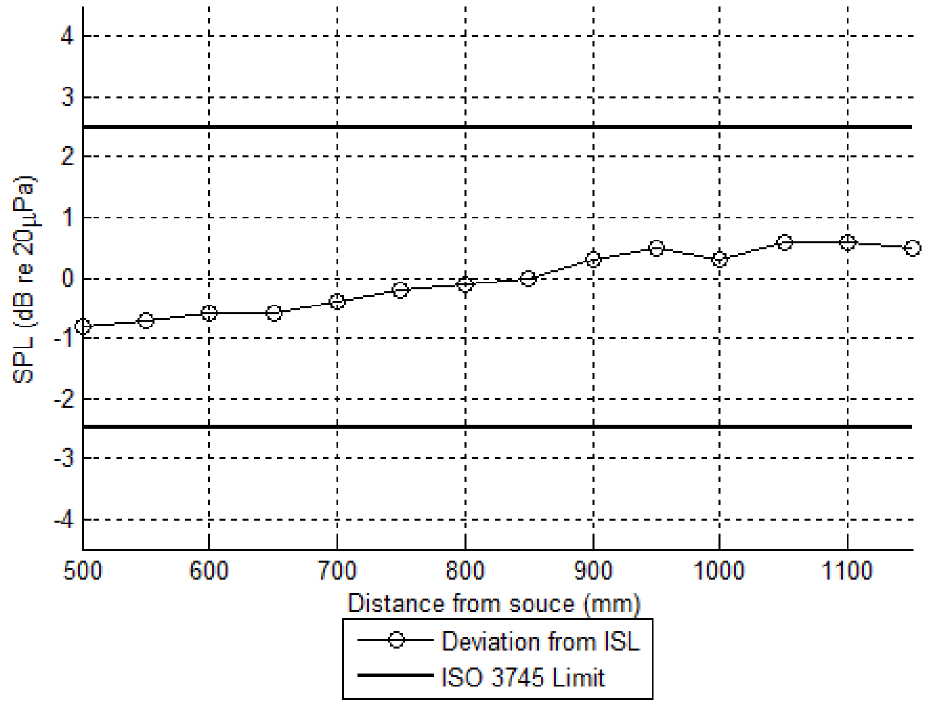

Figure 90.—Northwest Upper Trihedral Traverse Mid Frequency, 160 Hz, Pure Tones

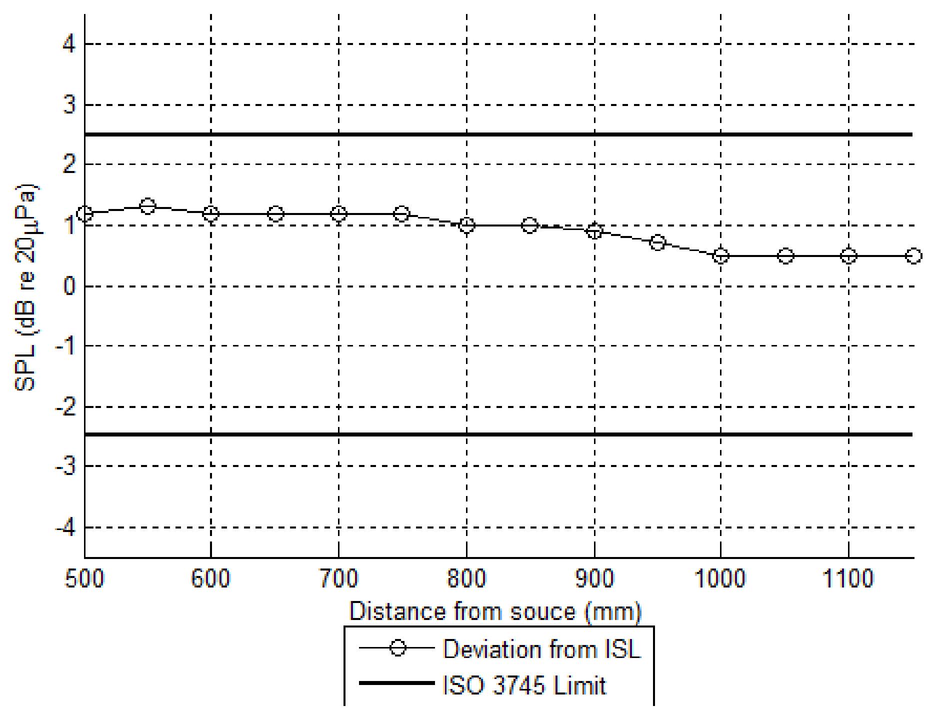

Figure 91.—Northwest Upper Trihedral Traverse Mid Frequency, 200 Hz, Pure Tones

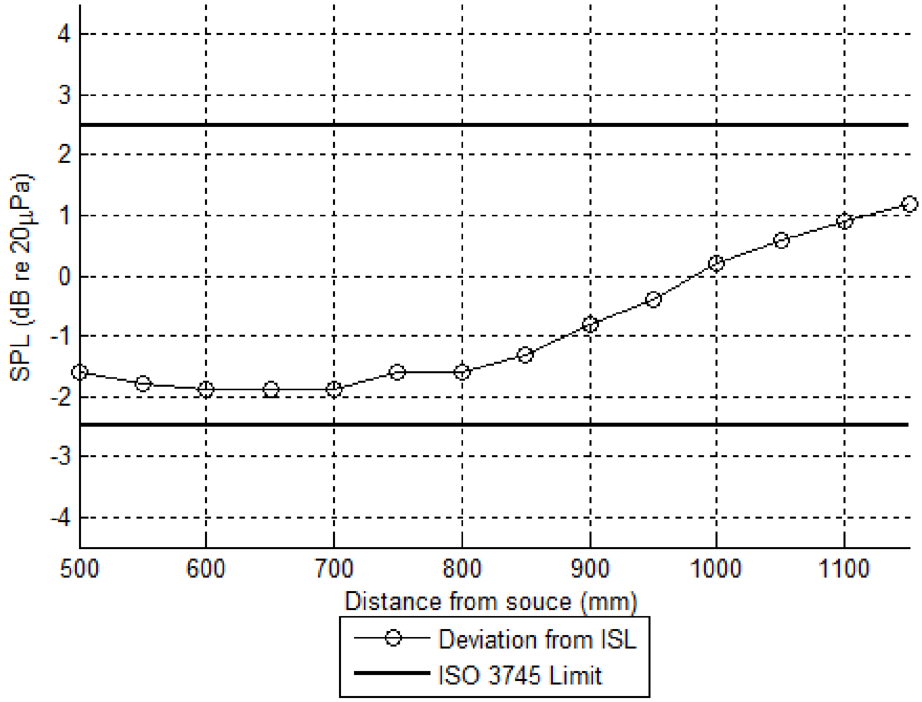

Figure 92.—Northwest Upper Trihedral Traverse Mid Frequency, 250 Hz, Pure Tones

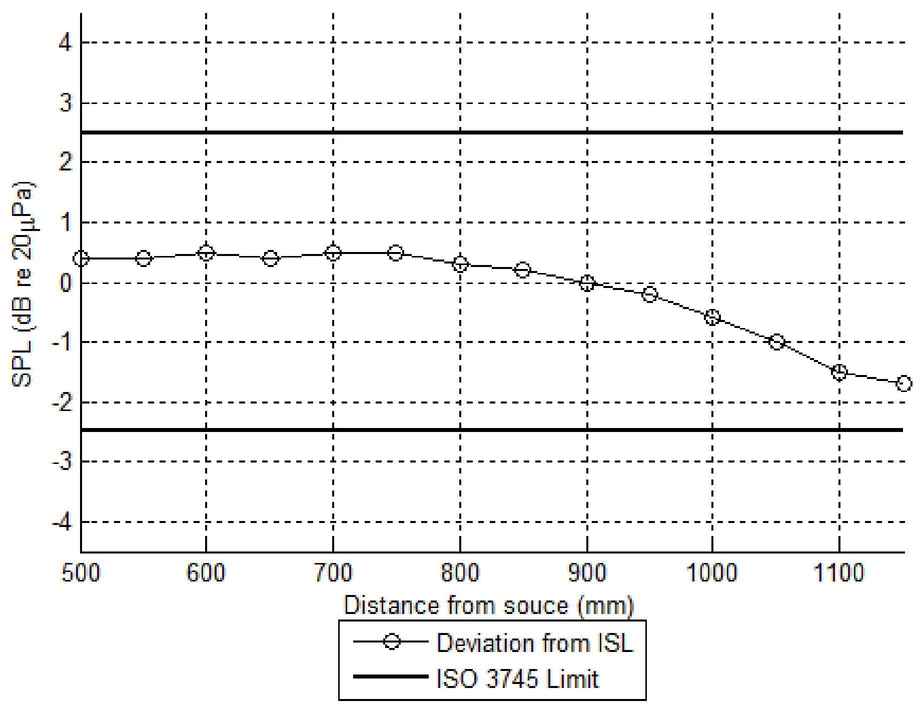

Figure 93.—Northwest Upper Trihedral Traverse Mid Frequency, 315 Hz, Pure Tones

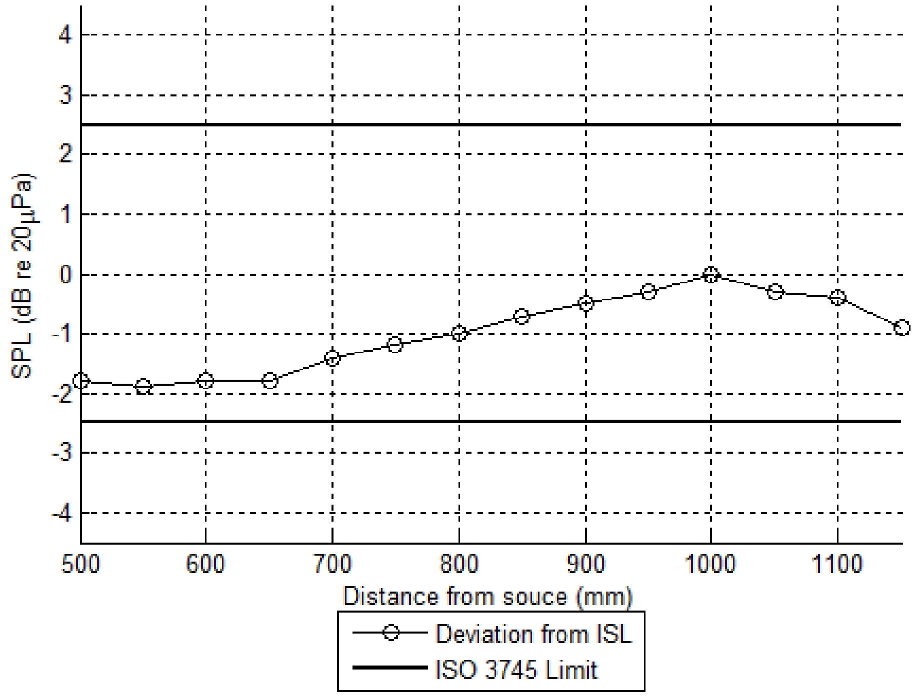

Figure 94.—Northwest Upper Trihedral Traverse Mid Frequency, 400 Hz, Pure Tones

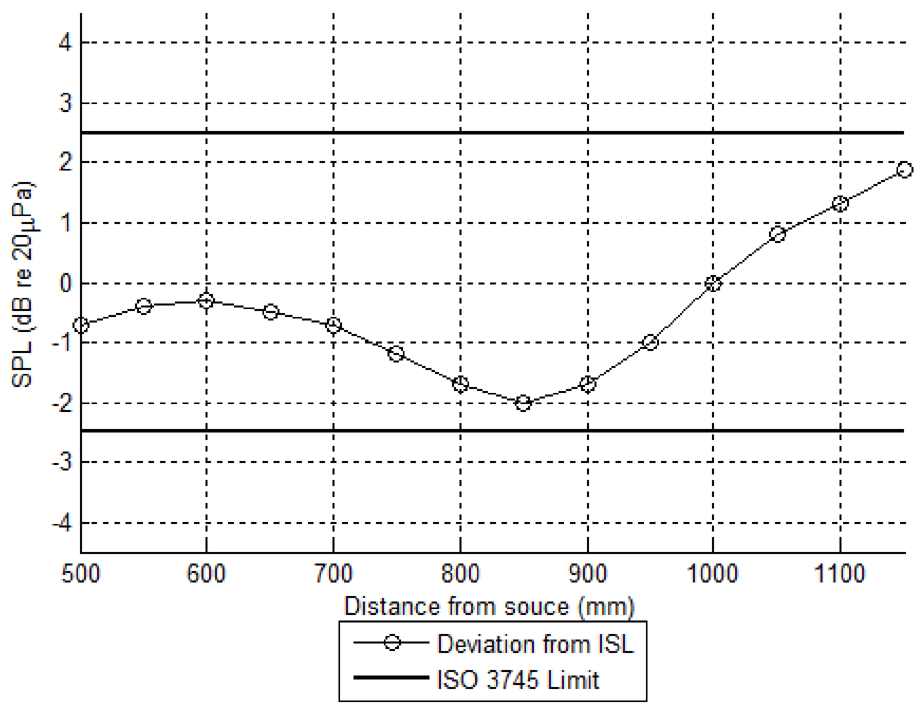

Figure 95.—Northwest Upper Trihedral Traverse Mid Frequency, 500 Hz, Pure Tones

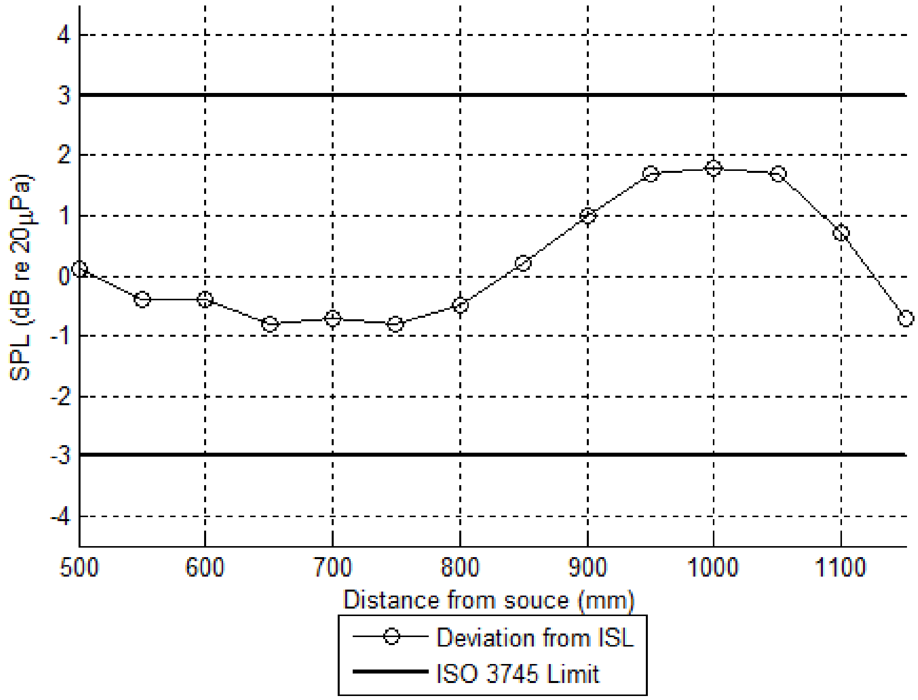

Figure 96.—Northwest Upper Trihedral Traverse Mid Frequency, 630 Hz, Pure Tones

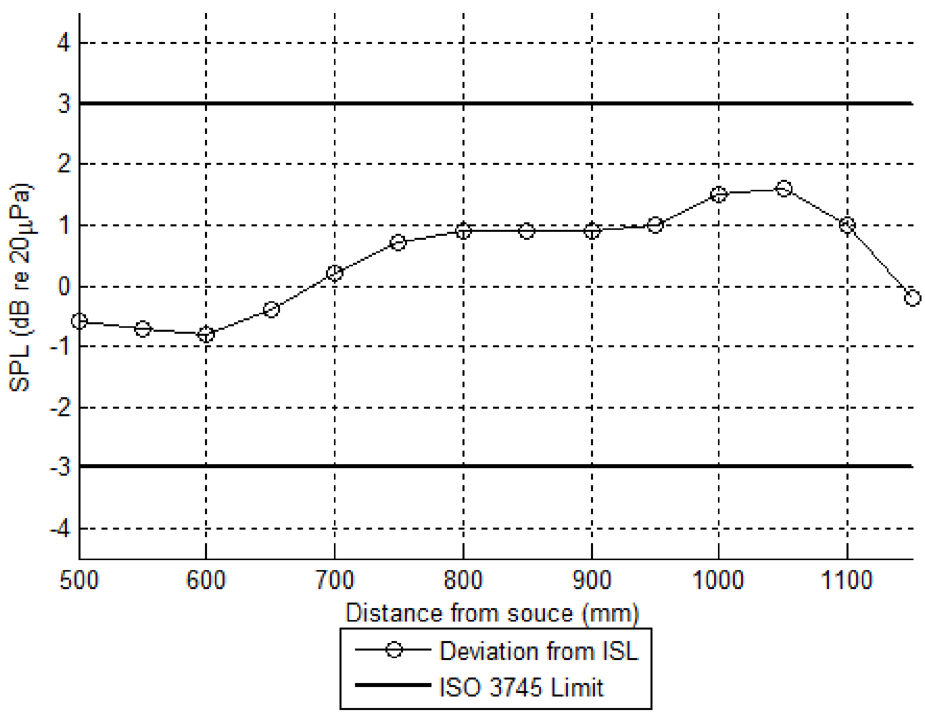

Figure 97.—Northwest Upper Trihedral Traverse Mid Frequency, 800 Hz, Pure Tones

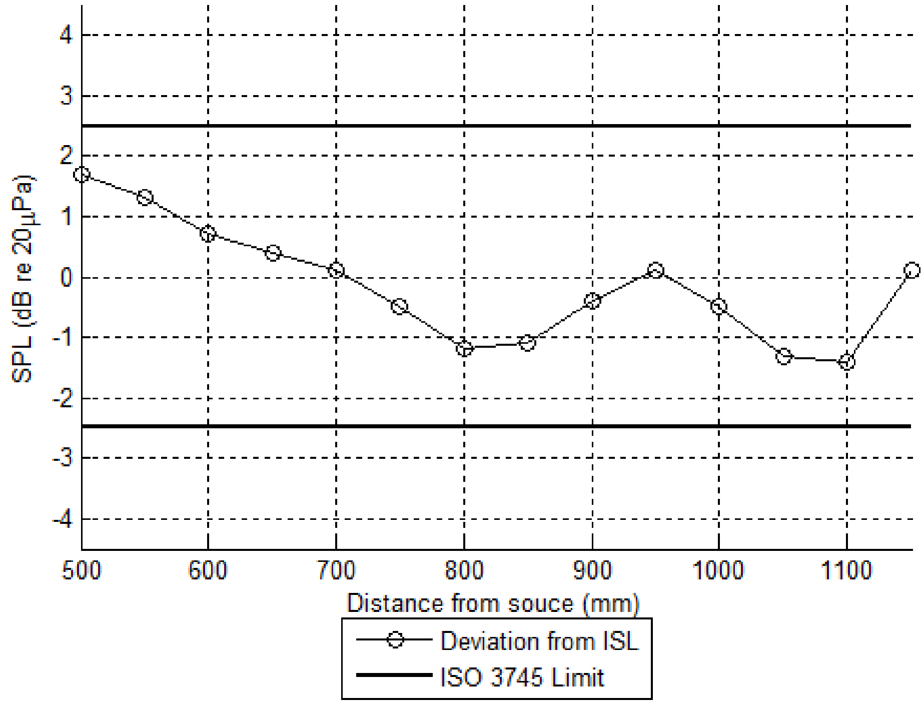

Figure 98.—Northwest Upper Trihedral Traverse Mid Frequency, 1,000 Hz, Pure Tones

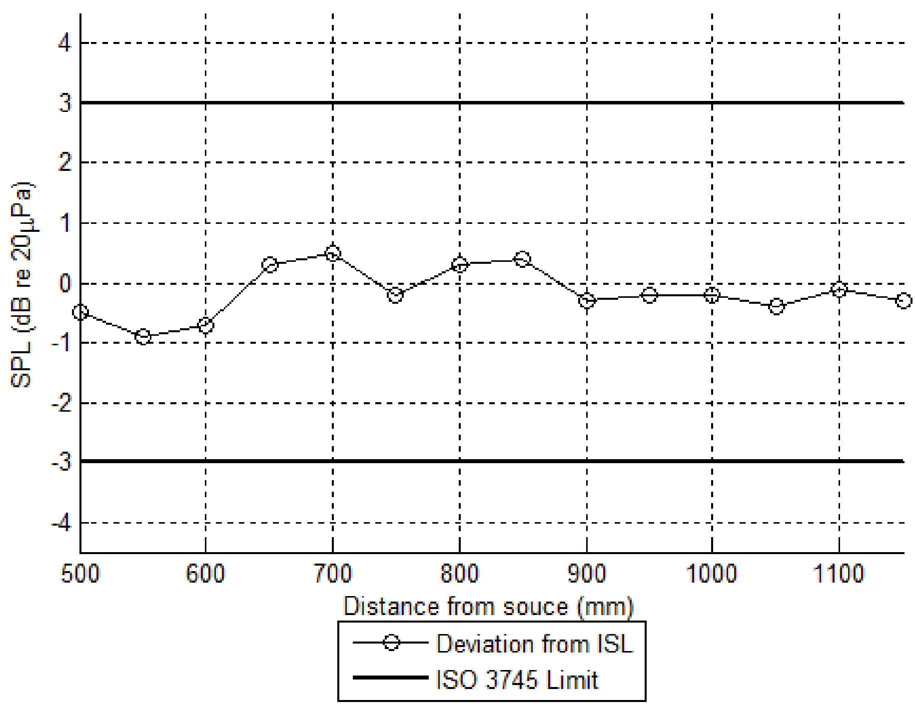

Figure 99.—Northwest Upper Trihedral Traverse Mid Frequency, 1,250 Hz, Pure Tones

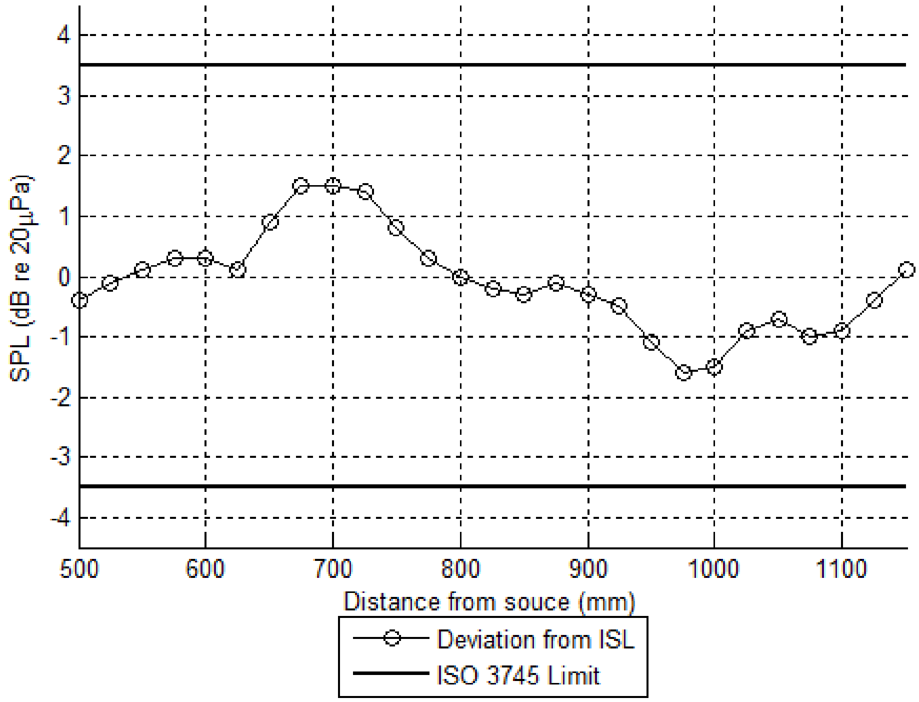

Figure 100.—Northwest Upper Trihedral Traverse High Frequency, 1,600 Hz, Pure Tones

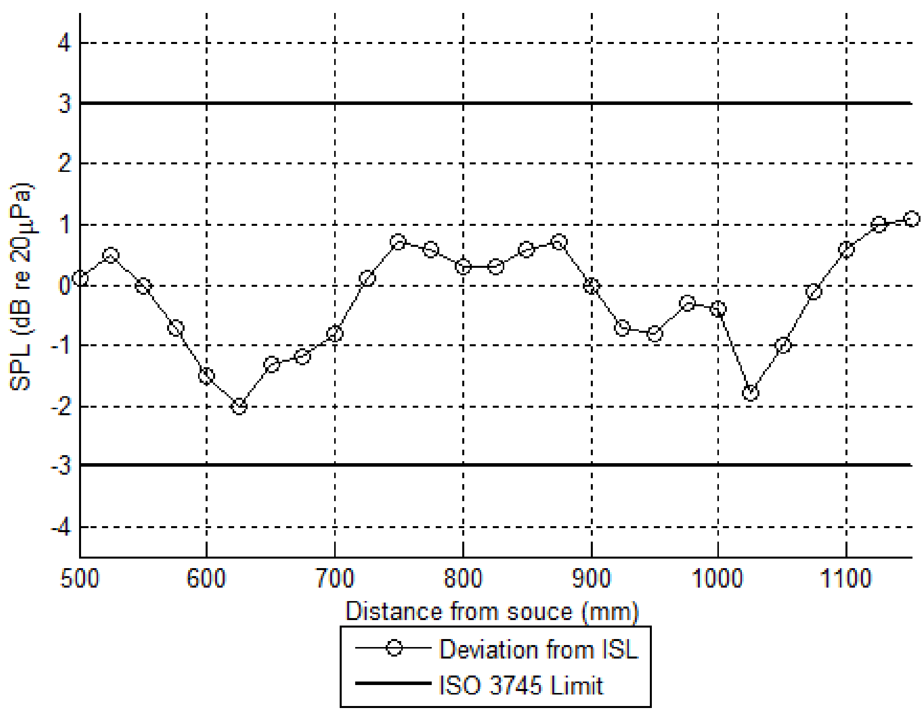

Figure 101.—Northwest Upper Trihedral Traverse High Frequency, 2,000 Hz, Pure Tones

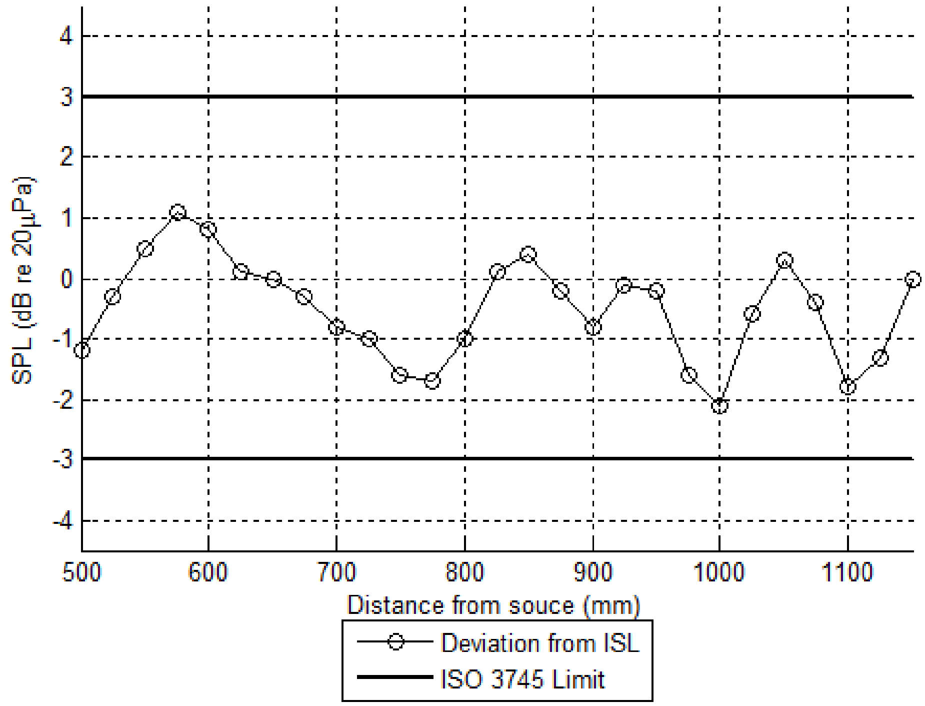

Figure 102.—Northwest Upper Trihedral Traverse High Frequency, 2,500 Hz, Pure Tones

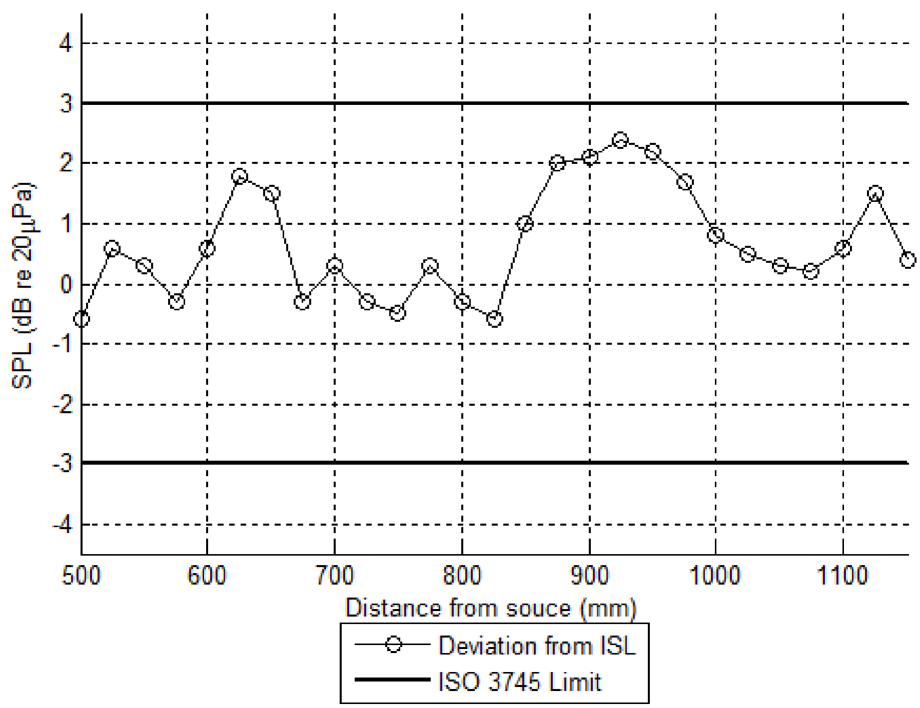

Figure 103.—Northwest Upper Trihedral Traverse High Frequency, 3,150 Hz, Pure Tones

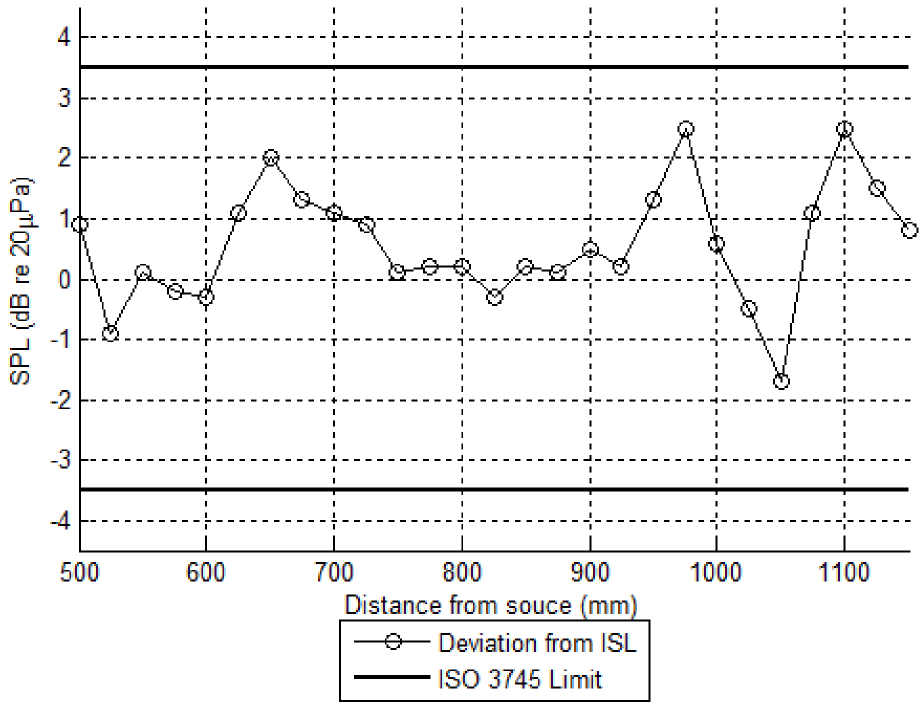

Figure 104.—Northwest Upper Trihedral Traverse High Frequency, 4,000 Hz, Pure Tones

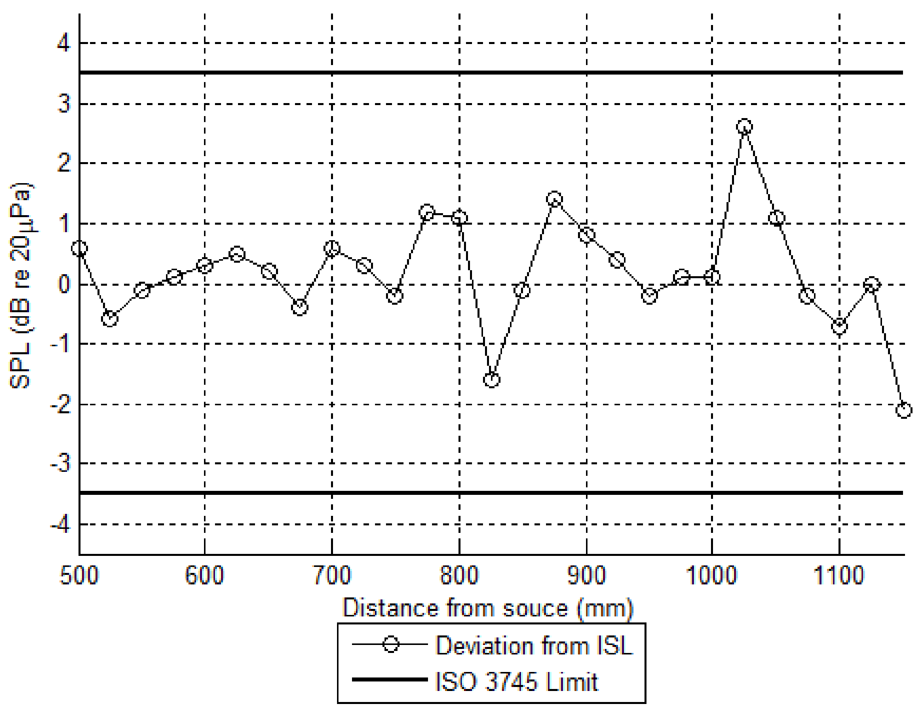

Figure 105.—Northwest Upper Trihedral Traverse High Frequency, 5,000 Hz, Pure Tones

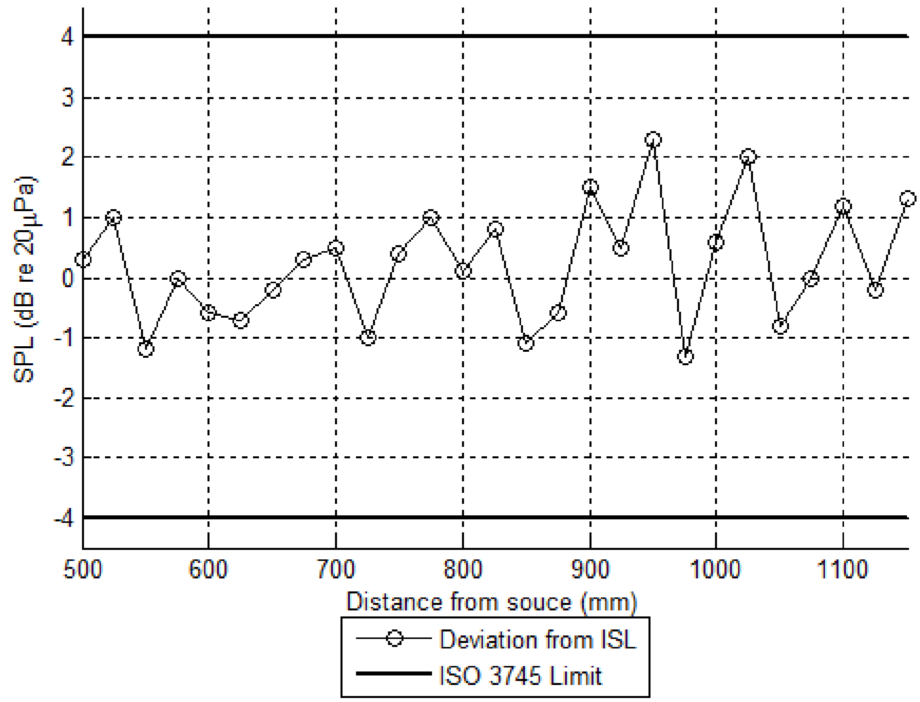

Figure 106.—Northwest Upper Trihedral Traverse High Frequency, 6,300 Hz, Pure Tones

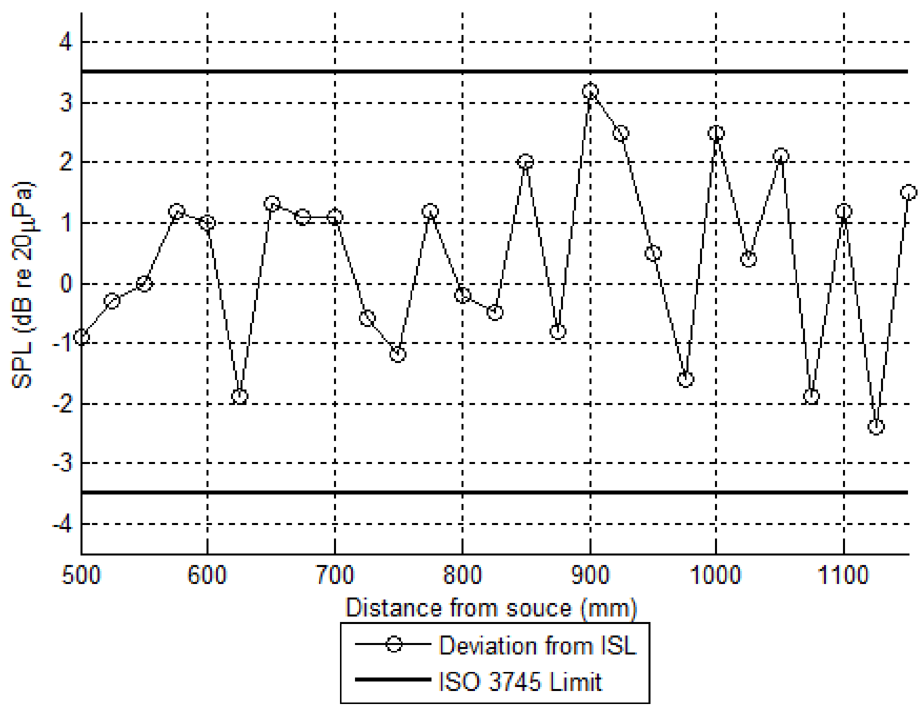

Figure 107.—Northwest Upper Trihedral Traverse High Frequency, 8,000 Hz, Pure Tones

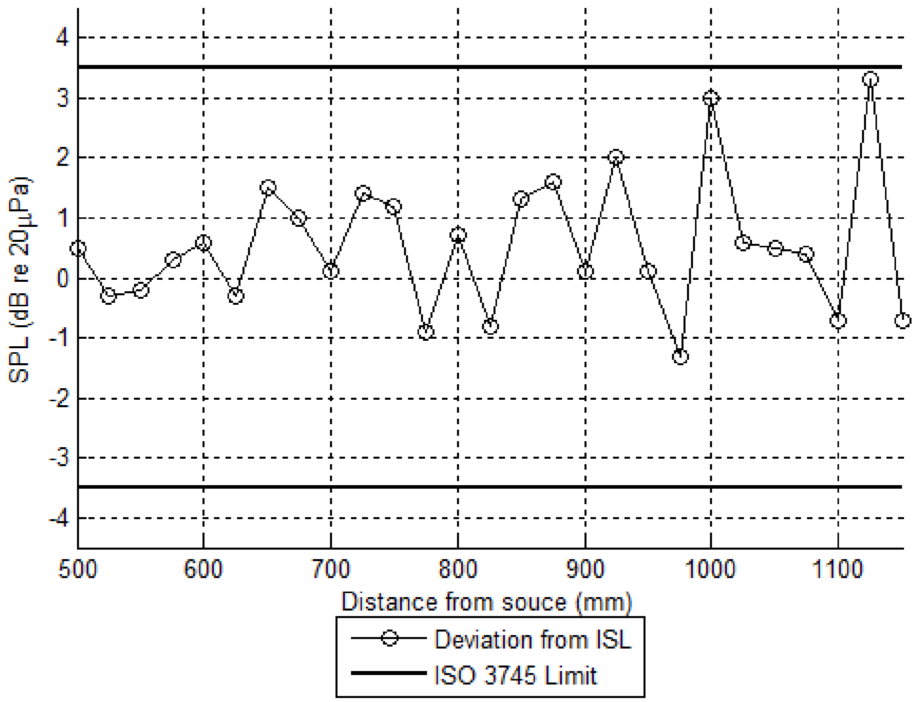

Figure 108.—Northwest Upper Trihedral Traverse High Frequency, 10,000 Hz, Pure Tones

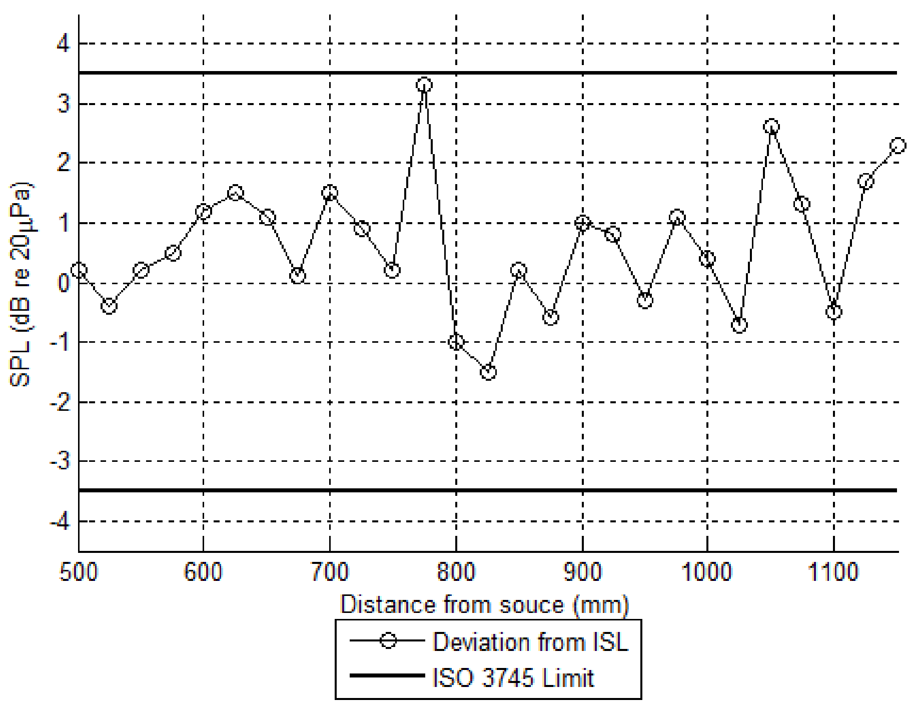

Figure 109.—Northwest Upper Trihedral Traverse High Frequency, 12,500 Hz, Pure Tones

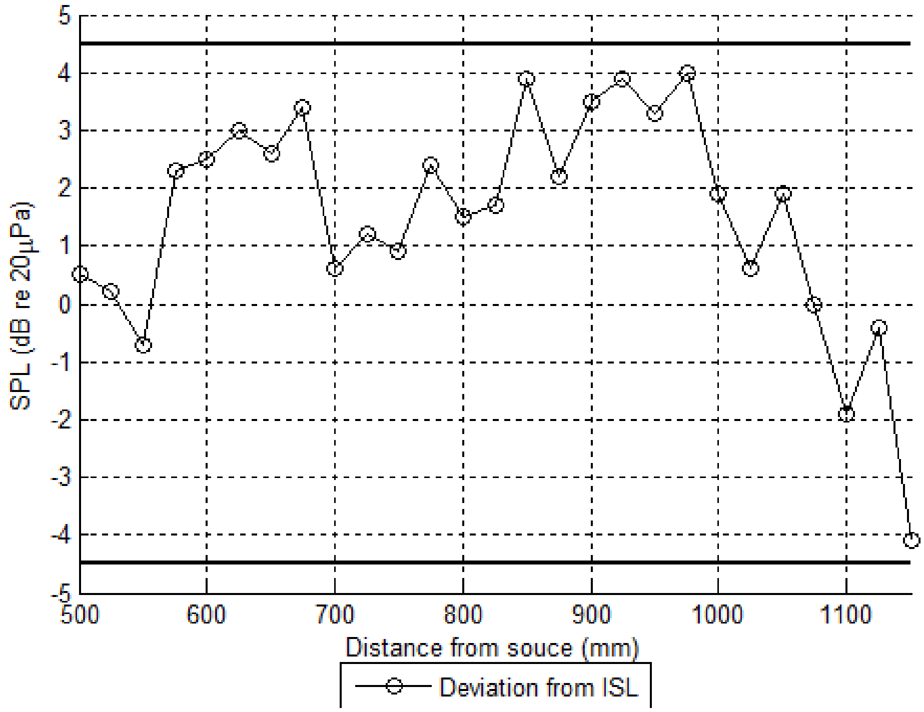

Figure 110.—Northwest Upper Trihedral Traverse High Frequency, 16,000 Hz, Pure Tones

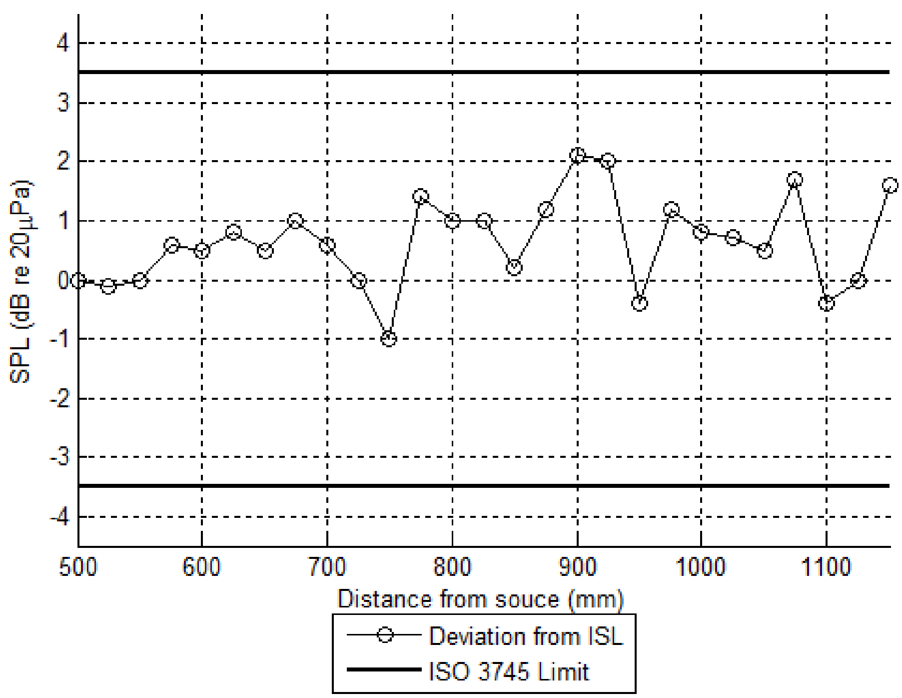

Figure 111.—Northwest Upper Trihedral Traverse High Frequency, 20,000 Hz, Pure Tones

TABLE 2.—NUMERICAL VALUES FOR EAST HORIZONTAL TRAVERSE

r, mm	Frequency, Hz										r, mm	Frequency, Hz											
	160	200	250	315	400	500	630	800	1,000	1,250		1,600	2,000	2,500	3,150	4,000	5,000	6,300	8,000	10,000	12,500	16,000	20,000
500	–0.5	–1.5	0.4	1.0	–0.4	–0.1	1.4	0.2	0.7	–0.8	500	–2.6	0.2	0.1	–1.7	–0.5	–0.5	1.0	1.8	–0.3	0.3	–1.3	0.3
550	–0.4	–1.7	0.5	0.7	–0.5	0.1	1.1	0.9	–0.3	–0.5	525	–2.1	0.2	0.6	–0.5	–0.3	–0.8	–0.8	2.4	0.2	–0.2	–1.2	0.1
600	–0.3	–1.6	0.5	0.4	–0.5	0.1	0.8	1.4	–0.1	–0.7	550	–1.7	–0.5	0.3	–0.2	–2.3	–2.0	0.7	1.2	–0.3	0.7	0.3	–0.5
650	–0.2	–1.6	0.6	–0.1	–0.5	0.2	0.3	1.5	0.3	–0.2	575	–1.7	–1.2	–1.4	–0.1	–1.3	–0.7	0.3	3.4	–1.2	0.4	0.8	–0.6
700	–0.2	–1.7	0.4	–0.4	–0.4	0.4	–0.7	1.3	–0.8	–0.2	600	–1.8	–0.2	–2.8	–0.7	0.2	–0.3	–0.3	–0.1	0.3	–0.5	2.0	0.1
750	–0.2	–1.5	0.3	–0.8	–0.2	0.7	–2.0	0.6	–1.7	–0.8	625	–1.7	–0.6	–2.5	–1.0	0.3	–1.6	–0.7	1.6	–2.4	1.3	1.7	1.8
800	–0.1	–1.4	0.0	–0.8	0.3	0.8	–2.8	0.0	–0.1	–0.2	650	–1.4	–0.2	–1.7	–0.7	–2.2	–1.7	0.3	–0.4	0.9	0.1	1.2	1.0
850	–0.2	–1.4	–0.4	–0.7	0.5	0.9	–2.3	–0.9	0.6	–0.2	675	–1.6	1.3	0.0	–1.2	–2.1	1.1	1.0	0.7	–1.7	–0.3	0.2	–0.5
900	–0.1	–1.3	–0.9	–0.6	1.1	0.8	–0.8	–1.4	0.4	–0.4	700	–2.0	2.3	1.3	–1.2	–0.1	1.1	–0.5	–0.2	0.7	2.7	–1.3	0.1
950	0.0	–1.1	–1.3	–0.5	1.4	0.5	0.4	–2.1	0.1	0.0	725	–2.4	1.5	1.4	–0.9	–0.4	–0.8	–1.4	1.2	–2.0	1.6	–1.4	0.5
1,000	0.1	–1.1	–2.0	–0.5	1.7	–0.1	0.5	–2.6	0.1	–0.8	750	–2.3	0.5	0.2	–1.3	–2.0	1.9	–1.6	0.8	0.9	–1.1	–0.2	0.3
1,050	0.3	–1.0	–2.3	–0.5	2.0	–0.8	0.1	–1.7	–0.3	–1.6	775	–2.8	0.7	–0.4	0.9	–2.7	2.7	–1.5	1.6	–1.7	0.9	–0.8	0.5
1,100	0.3	–1.0	–2.3	–0.6	2.2	–1.4	–0.8	0.0	–0.8	–0.9	800	–3.4	0.3	–0.8	1.3	–0.8	2.6	0.1	2.3	–0.8	–0.1	–0.7	0.6
1,150	0.6	–0.9	–1.8	–0.9	2.2	–1.8	–1.3	0.6	–1.0	–1.6	825	–2.7	–0.9	–0.4	1.2	–0.4	2.4	–1.6	1.4	–0.3	0.6	–1.3	0.7
											850	–1.2	–0.5	0.4	–2.3	–0.7	3.5	–0.5	2.5	0.0	1.4	–1.8	0.5
											875	–0.3	–0.6	1.4	–2.3	–2.9	2.8	0.2	1.5	–0.4	0.9	–0.3	1.4
											900	0.2	–0.7	0.6	0.5	–1.0	–1.5	0.3	2.6	1.0	1.1	0.9	1.4
											925	0.3	–0.6	–1.9	2.0	–1.5	–1.1	0.8	1.0	–1.2	0.6	0.6	1.8
											950	1.3	0.0	–1.8	1.9	–1.7	–2.4	1.5	0.8	0.1	0.7	–0.5	2.5
											975	2.3	0.3	–1.6	0.6	1.5	–2.4	0.2	–0.8	0.2	1.4	1.7	3.5
											1,000	1.6	0.0	–1.6	–1.2	3.0	–0.1	0.3	–0.5	0.5	–0.4	1.1	2.4
											1,025	1.0	–0.1	0.7	–1.5	1.4	–1.8	0.0	–0.2	–0.2	3.2	0.9	2.1
											1,050	0.4	–0.9	1.9	–0.5	0.2	0.0	2.5	–1.7	1.5	–1.6	–1.0	1.0
											1,075	0.6	–1.2	1.5	1.3	–1.3	0.5	1.3	–0.8	0.5	1.4	0.9	–0.4
											1,100	0.0	0.6	0.7	2.1	0.9	–0.4	–2.3	–0.1	–0.1	0.9	0.1	–1.1
											1,125	–0.9	2.0	1.2	0.8	0.9	–0.5	2.1	–0.2	2.5	1.6	0.0	–0.3
											1,150	–2.5	1.5	0.3	0.2	1.3	–0.2	0.0	–1.5	–1.6	1.0	–1.2	2.5
Max	0.6	–0.9	0.6	1.0	2.2	0.9	1.4	1.5	0.7	0.0	Max	2.3	2.3	1.9	2.1	3.0	3.5	2.5	3.4	2.5	3.2	2.0	3.5
Min	–0.5	–1.7	–2.3	–0.9	–0.5	–1.8	–2.8	–2.6	–1.7	–1.6	Min	–3.4	–1.2	–2.8	–2.3	–2.9	–2.4	–2.3	–1.7	–2.4	–1.6	–1.8	–1.1
Limit	±2.5	±2.5	±2.5	±2.5	±2.5	±2.5	±3.0	±3.0	±2.5	±3.5	Limit	±3.0	±3.0	±3.0	±3.0	±3.5	±3.5	±4.0	±3.5	±3.5	±3.5	±4.5	±3.5

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TABLE 3.—NUMERICAL VALUES FOR NORTH HORIZONTAL WALL TRAVERSE

r, mm	Frequency, Hz										r, mm												
	160	200	250	315	400	500	630	800	1,000	1,250		1,600	2,000	2,500	3,150	4,000	5,000	6,300	8,000	10,000	12,500	16,000	20,000
500	0.2	–2.0	–1.0	0.6	–1.2	0.6	1.2	1.2	–0.6	–0.9	500	–0.1	0.8	0.6	2.4	–0.1	0.4	–0.4	0.0	1.0	0.3	0.9	–0.5
550	0.4	–2.2	–1.3	0.8	–1.4	0.7	1.3	2.3	–0.5	–0.4	525	0.1	0.3	0.5	2.2	0.1	0.9	0.8	0.8	–0.8	–1.0	0.4	–0.6
600	0.6	–2.1	–1.5	1.2	–1.4	0.6	0.9	2.6	–0.5	–0.9	550	–0.1	–0.1	–0.3	2.1	–0.2	–0.3	–1.1	0.1	–0.9	–0.9	0.2	0.0
650	0.8	–2.1	–1.7	1.4	–1.2	0.6	0.5	2.1	–0.2	–1.2	575	1.0	–1.1	–1.8	–2.2	–0.9	0.2	1.2	0.4	0.9	–0.1	0.4	0.9
700	0.9	–2.0	–1.7	1.6	–1.1	0.6	0.1	1.4	0.1	–0.3	600	0.3	–1.3	–0.5	0.0	–0.7	0.8	1.5	0.5	–0.8	0.0	0.1	0.1
750	0.8	–1.9	–1.6	1.5	–0.9	0.7	–0.3	1.3	0.7	–0.2	625	0.4	–0.2	–0.3	1.2	–0.3	1.0	–0.9	0.3	0.6	–0.8	0.6	0.9
800	1.0	–1.7	–1.4	1.4	–0.9	0.9	–0.8	0.5	0.9	–0.6	650	0.2	0.6	–0.3	1.7	–0.8	0.5	–0.1	0.1	–0.7	–0.5	0.5	1.2
850	0.8	–1.3	–1.4	1.0	–0.7	1.2	–1.1	–0.7	1.2	0.1	675	0.9	1.3	0.6	0.6	–3.0	0.3	0.8	0.6	1.2	0.3	1.5	0.7
900	0.8	–0.9	–1.5	0.5	–0.6	1.2	–1.1	–2.2	1.0	–0.6	700	1.0	0.5	0.0	–1.5	–1.8	–0.3	–1.2	1.7	0.1	–0.3	0.6	0.0
950	0.8	–0.4	–1.3	–0.1	–0.4	0.8	–1.0	–1.9	0.9	–1.8	725	0.7	–0.5	–1.5	–1.7	–0.2	–1.2	–0.2	–1.2	0.0	1.2	–0.1	0.6
1,000	0.6	0.0	–1.3	–0.6	0.1	0.3	–0.6	–1.0	–0.1	–1.2	750	0.7	–0.3	–2.4	0.0	0.3	–0.8	0.4	–0.7	0.6	0.8	–0.2	–0.1
1,050	0.4	0.4	–1.2	–1.0	0.5	–0.4	–0.5	0.1	–2.0	–1.3	775	0.8	–0.4	–1.2	2.3	–0.3	–0.1	0.0	0.4	–1.0	–1.4	0.6	–0.4
1,100	0.2	0.7	–1.1	–0.8	1.0	–1.0	–1.0	0.7	–1.9	–0.6	800	0.6	–1.2	0.1	1.3	–0.4	–1.1	2.4	–2.2	0.0	1.4	0.7	–0.4
1,150	0.0	0.9	–0.8	–0.3	1.7	–1.0	–1.3	1.9	0.6	1.0	825	1.3	–1.1	1.4	0.5	–0.3	0.4	0.8	–0.2	–1.2	1.1	–0.9	–1.4
											850	1.5	0.0	1.3	–1.4	0.6	–1.1	–2.1	–2.4	–1.0	–0.3	–0.6	–0.1
											875	0.9	0.3	0.2	–0.2	1.5	–0.5	–1.1	1.5	0.3	0.7	–0.1	–0.2
											900	–0.2	0.2	0.0	–1.1	–1.4	1.9	0.6	0.0	1.0	1.4	–0.8	0.1
											925	0.0	0.3	–1.7	0.8	–1.1	1.1	0.5	0.3	–0.5	–0.2	–0.5	0.3
											950	0.4	–0.4	–2.7	1.2	0.0	–0.8	–0.6	0.6	1.4	0.7	0.9	–0.3
											975	0.8	–1.9	–2.7	0.4	0.3	–1.0	1.2	–1.3	0.0	–0.7	–0.1	0.4
											1,000	0.3	–2.0	–1.5	–0.4	1.3	0.0	–0.3	–1.0	0.9	–0.6	–0.8	–1.7
											1,025	–0.6	–0.3	–0.1	–1.7	0.1	1.1	–1.1	1.0	–0.9	0.4	–1.2	0.4
											1,050	–0.9	0.5	0.6	0.4	1.0	–1.7	–0.3	0.0	–0.1	–0.2	–0.1	0.6
											1,075	–0.4	0.0	0.9	–2.2	–0.2	–0.9	–0.4	–0.1	0.5	0.0	–0.6	0.7
											1,100	–0.6	0.4	1.4	0.8	1.0	1.0	–0.7	1.3	–0.9	–1.4	–1.3	–1.1
											1,125	–0.6	1.6	0.7	0.1	–0.6	–0.4	–0.9	–1.4	2.5	2.7	–1.8	–1.7
											1,150	–0.3	1.6	–1.0	1.3	0.8	–1.8	1.0	0.7	–1.9	0.3	0.9	–0.3
Max	1.0	0.9	–0.8	1.6	1.7	1.2	1.3	2.6	1.2	1.0	Max	1.5	1.6	1.4	2.4	1.5	1.9	2.4	1.7	2.5	2.7	1.5	1.2
Min	0.0	–2.2	–1.7	–1.0	–1.4	–1.0	–1.3	–2.2	–2.0	–1.8	Min	–0.9	–2.0	–2.7	–2.2	–3.0	–1.8	–2.1	–2.4	–1.9	–1.4	–1.8	–1.7
Limit	±2.5	±2.5	±2.5	±2.5	±2.5	±2.5	±3.0	±3.0	±2.5	±3.5	Limit	±3.0	±3.0	±3.0	±3.0	±3.5	±3.5	±4.0	±3.5	±3.5	±3.5	±4.5	±3.5

TABLE 4.—NUMERICAL VALUES FOR NORTH UPPER DIHEDRAL TRAVERSE

r, mm	Frequency, Hz																					
	160	200	250	315	400	500	630	800	1,000	1,250	1,600	2,000	2,500	3,150	4,000	5,000	6,300	8,000	10,000	12,500	16,000	20,000
500	1.0	0.2	–0.6	–1.0	0.0	–0.7	–0.8	–1.2	0.8	0.4	–0.9	0.4	–1.3	0.6	0.5	–0.2	–0.7	–0.3	0.1	–0.6	0.9	–0.6
525	1.2	0.2	–0.5	–0.8	0.2	–0.9	–0.7	–1.4	0.5	0.4	–0.6	–0.1	–0.6	1.5	–0.5	1.5	0.6	–0.5	0.1	0.7	1.5	–0.3
550	1.1	0.2	–0.4	–0.7	0.3	–1.0	–1.0	–1.6	0.5	0.8	–0.1	–0.7	0.2	–0.2	0.6	0.3	3.0	–0.1	–0.5	–0.3	0.8	–0.7
575	1.1	0.2	–0.3	–0.7	0.5	–1.5	–0.9	–1.8	0.3	0.8	0.1	–0.5	1.0	0.4	0.8	–1.3	2.3	–0.5	0.5	0.8	0.0	–0.4
600	1.3	0.3	–0.1	–0.7	0.4	–1.6	–1.1	–2.0	0.1	0.5	0.1	0.5	1.1	–0.5	1.1	0.9	1.2	–1.4	0.9	–0.2	0.5	0.0
625	1.4	0.2	0.0	–0.6	0.6	–1.9	–0.6	–1.9	0.3	–0.1	–0.2	0.8	–0.9	0.3	0.8	–0.9	2.1	0.1	0.4	1.4	1.3	–0.9
650	1.4	0.3	0.1	–0.7	0.8	–2.0	–0.1	–1.4	0.6	–0.8	–0.6	0.1	–1.9	1.0	0.5	0.3	1.6	–0.3	0.8	1.0	0.7	0.1
675	1.3	0.3	0.3	–0.6	0.9	–2.1	0.5	–0.7	0.9	–0.4	–0.5	–1.0	0.4	–0.8	0.2	–1.5	1.4	–1.8	–1.4	0.9	0.9	0.1
700	1.3	0.4	0.5	–0.4	1.1	–1.9	0.8	–0.2	1.2	0.3	–0.4	–0.9	1.0	0.5	–0.2	–1.0	0.8	–0.5	–1.8	1.3	2.6	0.0
725	1.4	0.4	0.7	–0.3	1.1	–1.8	1.0	0.2	1.2	1.1	0.1	0.0	–0.9	0.5	–0.3	–0.1	0.5	0.5	0.9	0.2	1.4	0.9
750	1.3	0.4	1.0	–0.4	1.2	–1.6	1.1	0.3	1.1	1.4	0.7	0.9	–1.2	0.4	–0.9	–0.6	–0.7	–1.3	0.2	0.8	1.0	–0.8
775	1.4	0.5	1.0	–0.4	1.2	–1.5	1.0	0.1	0.8	1.5	0.9	1.3	–0.2	–3.0	–1.3	0.5	1.0	0.0	–1.1	2.1	1.4	0.2
800	1.4	0.6	1.2	–0.7	1.1	–1.4	1.0	–0.2	0.6	0.7	0.8	1.0	1.2	1.0	–1.6	–0.5	1.4	0.0	–0.7	1.2	1.9	0.7
825	1.2	0.7	1.4	–0.8	1.1	–1.1	0.8	–0.6	0.2	0.3	0.4	–0.3	1.8	0.0	1.1	0.8	0.1	–1.2	0.1	2.1	0.5	0.4
850	1.2	0.7	1.4	–1.0	1.0	–1.0	1.0	–0.5	–0.6	–0.6	0.4	–1.5	0.3	–1.5	–0.8	1.5	–1.6	1.3	–1.0	0.7	–0.3	0.4
875	1.0	0.9	1.4	–1.3	0.7	–0.6	0.9	0.0	–1.1	–1.5	0.2	–0.6	–2.2	–1.8	0.7	0.4	–1.0	–1.5	–2.2	1.2	0.0	–0.1
900	0.8	0.7	1.3	–1.7	0.5	–0.6	0.9	0.8	–1.8	–2.5	0.0	1.0	–1.7	–1.2	0.6	–0.7	0.1	0.9	–1.0	0.8	–0.4	0.6
925	0.3	0.8	1.5	–1.8	0.3	–0.3	1.3	1.5	–1.9	–2.9	–0.1	0.9	–0.9	1.2	0.3	–0.9	1.5	–0.3	–0.7	0.4	1.1	0.4
950	0.7	1.0	1.5	–1.8	–0.1	–0.1	1.4	1.9	–1.4	–1.9	0.1	0.3	–0.1	0.2	–1.7	–1.2	1.7	0.8	0.4	1.0	–0.6	–1.4
975	0.6	1.1	1.5	–2.0	–0.4	0.1	1.8	2.1	–0.8	–0.9	0.2	–0.5	0.6	0.3	1.8	0.6	–1.4	0.6	1.0	–1.8	–2.7	0.0
1,000	0.4	1.2	1.5	–1.9	–0.7	0.4	1.8	2.0	0.0	–0.1	0.3	–1.1	–0.3	–2.7	2.6	0.5	–2.5	–2.2	–0.5	0.1	–3.5	–2.1
1,025	0.2	1.2	1.4	–2.0	–1.0	0.8	1.7	1.6	0.4	0.5	–0.4	–1.6	–1.4	0.2	0.7	0.6	–2.9	0.9	1.4	–0.3	–0.6	–0.8
1,050	0.0	1.4	1.4	–1.8	–1.2	1.1	1.5	1.0	0.6	0.5	–0.9	–1.1	–1.9	0.6	1.1	1.0	–0.5	–0.1	–0.1	0.9	0.2	–0.4
1,075	–0.1	1.4	1.2	–1.5	–1.6	1.3	1.0	0.5	0.4	0.3	–1.0	–0.3	–0.9	1.5	0.9	2.2	–0.8	2.0	0.4	1.6	–0.5	–0.9
1,100	–0.4	1.4	1.0	–1.0	–1.8	1.5	0.7	0.2	0.1	0.2	–0.9	0.1	0.1	3.0	–1.4	–0.2	–0.2	–1.1	3.3	–0.3	2.1	0.8
1,125	–0.5	1.4	0.8	–0.7	–2.0	1.5	0.5	0.5	–0.2	0.0	–1.3	0.4	–0.3	–0.2	–2.0	0.6	0.0	2.6	1.9	0.4	1.8	–2.1
1,150	–0.6	1.3	0.5	–0.3	–2.0	1.5	0.4	0.9	–0.1	–0.2	–0.8	1.4	–2.1	0.9	2.0	0.6	–1.4	–1.0	–1.5	–1.9	1.9	–0.9
Max	1.4	1.4	1.5	–0.3	1.2	1.5	1.8	2.1	1.2	1.5	0.9	1.4	1.8	3.0	2.6	2.2	3.0	2.6	3.3	2.1	2.6	0.9
Min	–0.6	0.2	–0.6	–2.0	–2.0	–2.1	–1.1	–2.0	–1.9	–2.9	–1.3	–1.6	–2.2	–3.0	–2.0	–1.5	–2.9	–2.2	–2.2	–1.9	–3.5	–2.1
Limit	±2.5	±2.5	±2.5	±2.5	±2.5	±2.5	±3.0	±3.0	±2.5	±3.5	±3.0	±3.0	±3.0	±3.0	±3.5	±3.5	±4.0	±3.5	±3.5	±3.5	±4.5	±3.5

TABLE 5.—NUMERICAL VALUES FOR NORTHEAST UPPER TRIHEDRAL TRAVERSE

r, mm	Frequency (Hz)																				
	160	200	250	315	400	500	630	800	1,000	1,250	1,600	2,000	2,500	3,150	4,000	5,000	6,300	8,000	10,000	12,500	16,000	20,000
500	0.8	1.1	–0.6	–0.2	0.7	0.3	0.3	–1.2	1.9	–0.3	0.1	0.3	1.5	–0.1	1.1	1.0	–1.2	–0.3	–0.7	–0.5	1.7	0.3
525	1.0	1.0	–0.6	–0.2	0.6	0.1	0.0	–1.5	1.6	–0.5	0.3	0.8	1.4	–0.6	0.6	1.1	–1.2	0.5	0.6	0.1	0.3	0.4
550	0.9	1.1	–0.6	–0.1	0.5	0.0	–0.4	–1.7	0.6	–0.7	0.0	0.9	1.6	–0.3	2.1	–0.1	0.4	0.2	0.1	0.3	–2.1	–0.8
575	0.9	1.0	–0.8	–0.1	0.4	–0.2	–0.6	–2.0	–0.2	–0.4	0.1	0.3	1.0	–0.2	1.2	–0.1	0.5	0.3	–1.0	0.4	1.7	–0.3
600	0.9	1.0	–0.8	–0.1	0.5	–0.4	–0.6	–2.4	–0.6	–0.3	0.6	0.2	0.9	–1.0	–0.3	–0.7	1.0	0.7	–1.2	–0.7	2.3	0.6
625	1.1	1.0	–0.8	0.2	0.4	–0.5	–0.5	–2.7	–0.7	–0.1	1.0	0.6	0.6	–2.8	2.0	–2.1	0.8	0.8	–0.6	1.5	3.1	2.4
650	1.1	1.0	–0.9	0.2	0.5	–0.7	–0.4	–2.8	–0.5	0.1	0.9	1.1	1.1	–1.1	2.6	–1.2	3.6	1.4	–1.6	0.4	1.7	1.2
675	1.4	0.8	–0.9	0.4	0.5	–0.9	0.1	–2.5	–0.1	–0.2	0.1	0.6	0.7	–0.3	0.9	–0.7	1.7	1.3	–1.6	1.3	0.2	0.6
700	1.2	0.8	–1.0	0.7	0.5	–1.1	0.4	–1.8	0.5	–0.9	–0.7	1.0	0.7	–0.5	1.4	1.5	1.2	–0.1	0.2	0.9	0.9	0.5
725	1.3	0.9	–0.8	0.7	0.7	–1.2	1.1	–1.1	0.7	–1.4	–1.0	0.7	1.5	–0.7	0.9	3.0	–1.9	0.4	1.3	0.0	2.1	1.9
750	1.1	0.6	–0.7	0.7	0.8	–1.2	1.5	–0.1	0.7	–1.5	–0.5	0.4	2.6	–1.2	–1.2	0.7	1.3	–2.0	1.2	0.7	2.0	1.0
775	1.3	0.7	–0.5	0.7	0.9	–1.1	2.0	0.6	0.6	–0.6	–0.1	0.2	2.4	1.8	–3.5	0.8	–2.1	0.0	–0.7	–0.6	–0.3	–0.2
800	1.1	0.6	–0.5	0.8	1.0	–1.0	2.4	1.2	0.3	0.3	–0.1	0.4	–0.5	1.9	–2.9	2.4	–1.2	0.6	0.9	0.7	–4.2	–0.2
825	1.2	0.6	–0.3	0.8	1.3	–0.7	2.5	1.5	–0.1	1.0	–0.4	–0.1	0.2	1.3	–3.4	0.1	–3.7	–0.7	1.6	1.1	–1.3	0.4
850	1.3	0.6	0.0	0.6	1.3	–0.6	2.6	1.6	0.1	1.3	–0.2	–0.3	2.4	1.4	–3.3	1.1	–0.9	1.1	–1.8	1.1	0.6	1.0
875	1.1	0.7	0.1	0.4	1.4	–0.5	2.4	1.2	0.1	0.5	0.2	–0.1	1.1	1.5	–0.1	1.8	–0.6	–1.4	–0.4	1.6	2.1	1.0
900	1.2	0.8	0.3	0.2	1.4	–0.4	2.0	0.9	0.2	–0.4	0.0	0.8	0.5	1.8	–1.6	–2.2	0.0	0.8	1.8	–0.9	2.8	2.2
925	1.1	0.8	0.6	0.0	1.4	–0.2	1.6	0.4	0.4	–1.0	–1.0	0.6	2.6	0.8	–1.3	1.7	1.2	–2.3	1.6	–1.8	2.7	1.7
950	1.1	1.0	0.8	–0.1	1.3	–0.1	1.1	0.1	0.5	–0.8	–1.1	–0.6	2.2	0.4	–1.5	–0.9	–0.7	0.7	1.4	–2.6	1.8	3.0
975	1.0	0.9	1.0	–0.3	1.2	0.0	0.5	0.1	0.2	–0.1	–0.5	–0.9	1.4	1.8	0.6	–1.1	1.5	–1.6	2.0	–1.1	3.2	2.6
1,000	1.0	1.0	1.2	–0.6	1.1	0.0	–0.1	0.0	–0.4	0.4	0.4	0.3	1.6	–0.1	–0.8	–0.4	–1.1	–0.7	–0.7	1.4	2.9	2.1
1,025	1.0	1.1	1.3	–0.7	0.8	0.2	–0.3	0.1	–1.4	0.9	0.1	0.4	0.9	0.5	2.3	–1.4	–0.1	–3.4	0.7	1.4	3.9	1.3
1,050	0.8	1.2	1.6	–0.9	0.6	0.2	–0.2	0.5	–2.2	0.7	–1.2	0.0	0.1	0.5	2.4	–2.0	2.1	1.5	1.2	–0.3	2.6	2.2
1,075	0.5	1.3	1.7	–1.0	0.0	0.2	0.0	1.1	–2.4	0.2	–1.4	1.1	1.5	–1.7	1.2	–0.3	0.2	–0.4	–0.8	–0.8	2.2	1.4
1,100	0.5	1.4	1.9	–1.2	–0.3	0.3	0.1	1.5	–1.3	–0.1	0.2	1.8	2.4	–0.7	1.5	0.2	0.2	–2.0	0.3	0.0	0.8	2.0
1,125	0.6	1.5	2.1	–1.1	–0.8	0.6	0.4	1.9	0.4	–0.1	1.0	1.1	1.6	–2.3	1.0	0.1	0.1	–0.1	1.5	1.0	0.1	–0.2
1,150	0.4	1.6	2.2	–1.1	–1.3	0.6	0.7	2.2	1.5	0.2	1.5	–1.4	–1.0	–0.3	0.7	–3.4	–1.2	1.6	0.1	0.7	2.1	0.8
Max	1.4	1.6	2.2	0.8	1.4	0.6	2.6	2.2	1.9	1.3	1.5	1.8	2.6	1.9	2.6	3.0	3.6	1.6	2.0	1.6	3.9	3.0
Min	0.4	0.6	–1.0	–1.2	–1.3	–1.2	–0.6	–2.8	–2.4	–1.5	–1.4	–1.4	–1.0	–2.8	–3.5	–3.4	–3.7	–3.4	–1.8	–2.6	–4.2	–0.8
Limit	±2.5	±2.5	±2.5	±2.5	±2.5	±2.5	±3.0	±3.0	±2.5	±3.5	±3.0	±3.0	±3.0	±3.0	±3.5	±3.5	±4.0	±3.5	±3.5	±3.5	±4.5	±3.5

TABLE 6.—NUMERICAL VALUES FOR NORTHWEST UPPER TRIHEDRAL TRAVERSE

r, mm	Frequency, Hz																					
	160	200	250	315	400	500	630	800	1,000	1,250	r, mm	1,600	2,000	2,500	3,150	4,000	5,000	6,300	8,000	10,000	12,500	16,000	20,000
500	–0.8	1.2	–1.6	0.4	–1.8	–0.7	0.1	–0.6	1.7	–0.5	500	–0.4	0.1	–1.2	–0.6	0.9	0.6	0.3	–0.9	0.5	0.2	0.5	0.0
550	–0.7	1.3	–1.8	0.4	–1.9	–0.4	–0.4	–0.7	1.3	–0.9	525	–0.1	0.5	–0.3	0.6	–0.9	–0.6	1.0	–0.3	–0.3	–0.4	0.2	–0.1
600	–0.6	1.2	–1.9	0.5	–1.8	–0.3	–0.4	–0.8	0.7	–0.7	550	0.1	0.0	0.5	0.3	0.1	–0.1	–1.2	0.0	–0.2	0.2	–0.7	0.0
650	–0.6	1.2	–1.9	0.4	–1.8	–0.5	–0.8	–0.4	0.4	0.3	575	0.3	–0.7	1.1	–0.3	–0.2	0.1	0.0	1.2	0.3	0.5	2.3	0.6
700	–0.4	1.2	–1.9	0.5	–1.4	–0.7	–0.7	0.2	0.1	0.5	600	0.3	–1.5	0.8	0.6	–0.3	0.3	–0.6	1.0	0.6	1.2	2.5	0.5
750	–0.2	1.2	–1.6	0.5	–1.2	–1.2	–0.8	0.7	–0.5	–0.2	625	0.1	–2.0	0.1	1.8	1.1	0.5	–0.7	–1.9	–0.3	1.5	3.0	0.8
800	–0.1	1.0	–1.6	0.3	–1.0	–1.7	–0.5	0.9	–1.2	0.3	650	0.9	–1.3	0.0	1.5	2.0	0.2	–0.2	1.3	1.5	1.1	2.6	0.5
850	0.0	1.0	–1.3	0.2	–0.7	–2.0	0.2	0.9	–1.1	0.4	675	1.5	–1.2	–0.3	–0.3	1.3	–0.4	0.3	1.1	1.0	0.1	3.4	1.0
900	0.3	0.9	–0.8	0.0	–0.5	–1.7	1.0	0.9	–0.4	–0.3	700	1.5	–0.8	–0.8	0.3	1.1	0.6	0.5	1.1	0.1	1.5	0.6	0.6
950	0.5	0.7	–0.4	–0.2	–0.3	–1.0	1.7	1.0	0.1	–0.2	725	1.4	0.1	–1.0	–0.3	0.9	0.3	–1.0	–0.6	1.4	0.9	1.2	0.0
1,000	0.3	0.5	0.2	–0.6	0.0	0.0	1.8	1.5	–0.5	–0.2	750	0.8	0.7	–1.6	–0.5	0.1	–0.2	0.4	–1.2	1.2	0.2	0.9	–1.0
1,050	0.6	0.5	0.6	–1.0	–0.3	0.8	1.7	1.6	–1.3	–0.4	775	0.3	0.6	–1.7	0.3	0.2	1.2	1.0	1.2	–0.9	3.3	2.4	1.4
1,100	0.6	0.5	0.9	–1.5	–0.4	1.3	0.7	1.0	–1.4	–0.1	800	0.0	0.3	–1.0	–0.3	0.2	1.1	0.1	–0.2	0.7	–1.0	1.5	1.0
1,150	0.5	0.5	1.2	–1.7	–0.9	1.9	–0.7	–0.2	0.1	–0.3	825	–0.2	0.3	0.1	–0.6	–0.3	–1.6	0.8	–0.5	–0.8	–1.5	1.7	1.0
											850	–0.3	0.6	0.4	1.0	0.2	–0.1	–1.1	2.0	1.3	0.2	3.9	0.2
											875	–0.1	0.7	–0.2	2.0	0.1	1.4	–0.6	–0.8	1.6	–0.6	2.2	1.2
											900	–0.3	0.0	–0.8	2.1	0.5	0.8	1.5	3.2	0.1	1.0	3.5	2.1
											925	–0.5	–0.7	–0.1	2.4	0.2	0.4	0.5	2.5	2.0	0.8	3.9	2.0
											950	–1.1	–0.8	–0.2	2.2	1.3	–0.2	2.3	0.5	0.1	–0.3	3.3	–0.4
											975	–1.6	–0.3	–1.6	1.7	2.5	0.1	–1.3	–1.6	–1.3	1.1	4.0	1.2
											1,000	–1.5	–0.4	–2.1	0.8	0.6	0.1	0.6	2.5	3.0	0.4	1.9	0.8
											1,025	–0.9	–1.8	–0.6	0.5	–0.5	2.6	2.0	0.4	0.6	–0.7	0.6	0.7
											1,050	–0.7	–1.0	0.3	0.3	–1.7	1.1	–0.8	2.1	0.5	2.6	1.9	0.5
											1,075	–1.0	–0.1	–0.4	0.2	1.1	–0.2	0.0	–1.9	0.4	1.3	0.0	1.7
											1,100	–0.9	0.6	–1.8	0.6	2.5	–0.7	1.2	1.2	–0.7	–0.5	–1.9	–0.4
											1,125	–0.4	1.0	–1.3	1.5	1.5	0.0	–0.2	–2.4	3.3	1.7	–0.4	0.0
											1,150	0.1	1.1	0.0	0.4	0.8	–2.1	1.3	1.5	–0.7	2.3	–4.1	1.6
Max	0.6	1.3	1.2	0.5	0.0	1.9	1.8	1.6	1.7	0.5	Max	1.5	1.1	1.1	2.4	2.5	2.6	2.3	3.2	3.3	3.3	4.0	2.1
Min	–0.8	0.5	–1.9	–1.7	–1.9	–2.0	–0.8	–0.8	–1.4	–0.9	Min	–1.6	–2.0	–2.1	–0.6	–1.7	–2.1	–1.3	–2.4	–1.3	–1.5	–4.1	–1.0
Limit	±2.5	±2.5	±2.5	±2.5	±2.5	±2.5	±3.0	±3.0	±2.5	±3.5	Limit	±3.0	±3.0	±3.0	±3.0	±3.5	±3.5	±4.0	±3.5	±3.5	±3.5	±4.5	±3.5

Appendix A

Chamber characterization to full traverse distance; there is no qualification criteria for these traverses.*

- East Horizontal Traverse to 4.2 m
- North Horizontal Traverse to 2.5/2.2 m
- North Upper Dihedral Traverse to 2.5 m
- Northeast Upper Trihedral Traverse to 3.0/2.5 m
- Northwest Upper Trihedral Traverse to 3.0 m

The deviations from inverse square law at these distances was found to generally be in the range of ± 4 dB, but exceeded 6 to 10 dB at some frequencies.

*This is for informational use only and there is no guarantee that signal-to-noise requirements could be maintained for all frequencies to the full distance of each characterization traverse.

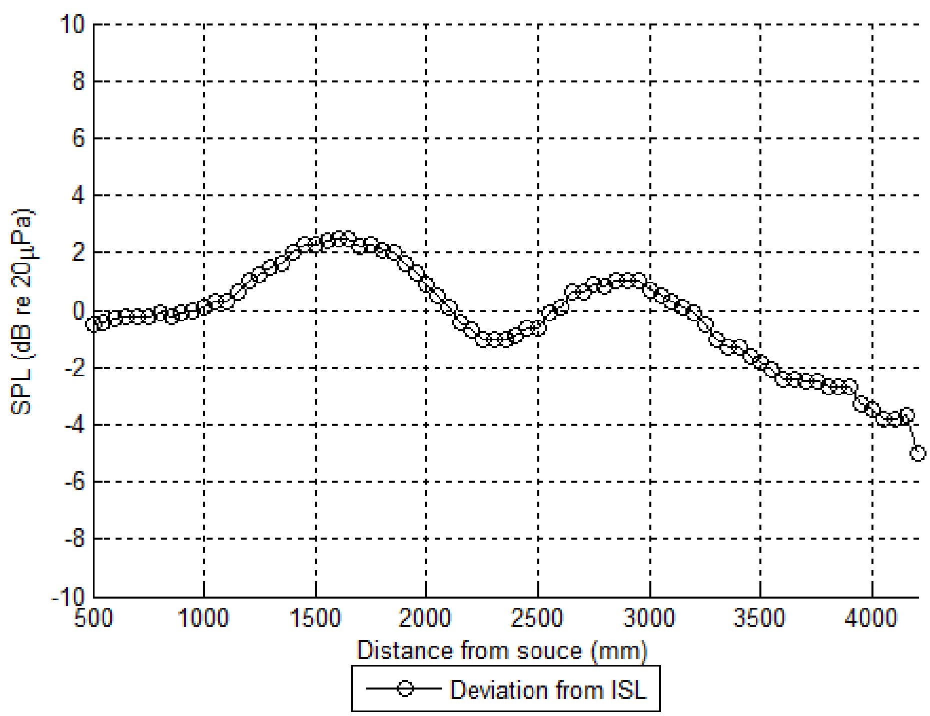

Figure A.1.—East Horizontal Traverse Mid Frequency, 160 Hz, Pure Tones

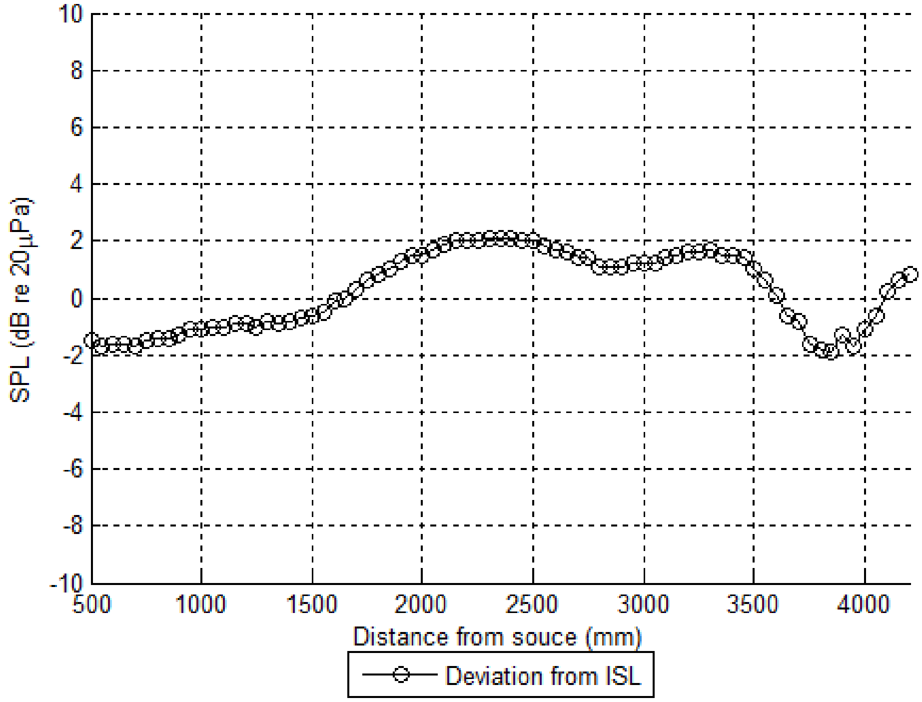

Figure A.2.—East Horizontal Traverse Mid Frequency, 200 Hz, Pure Tones

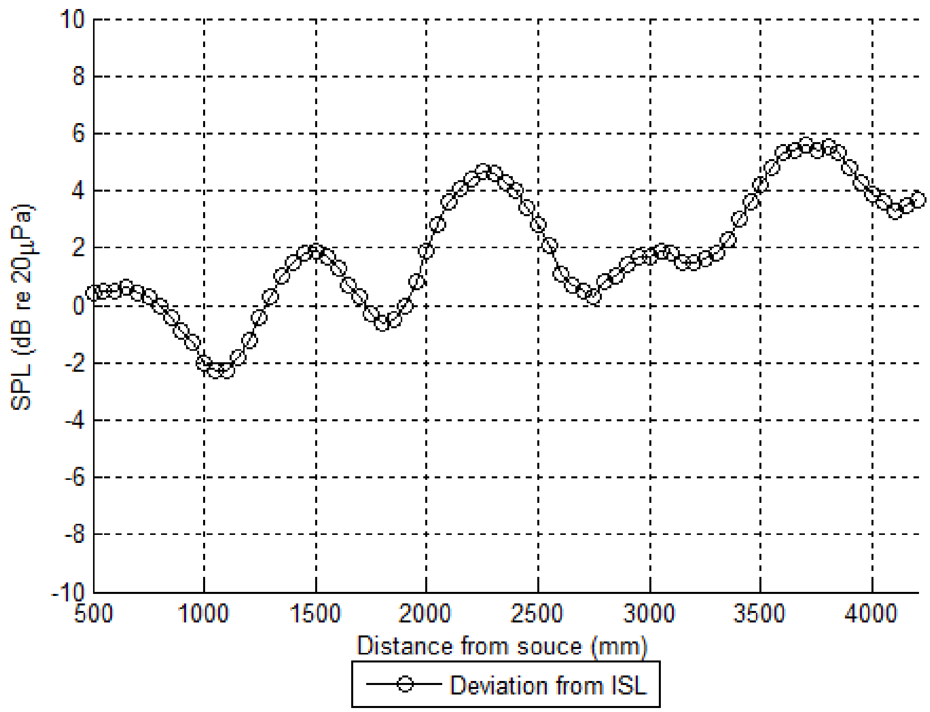

Figure A.3.—East Horizontal Traverse Mid Frequency, 250 Hz, Pure Tones

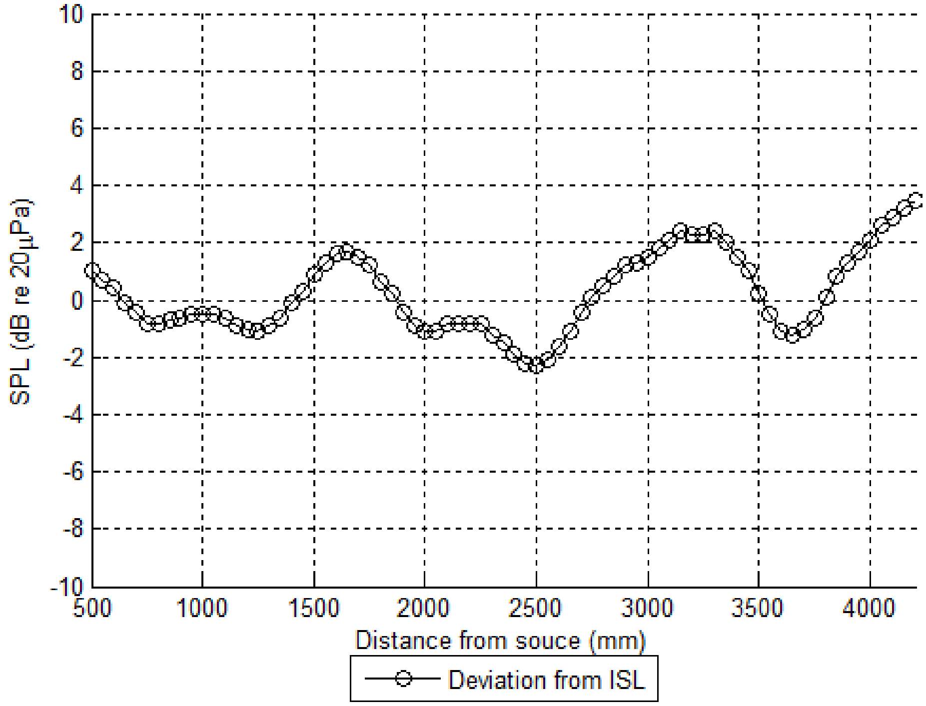

Figure A.4.—East Horizontal Traverse Mid Frequency, 315 Hz, Pure Tones

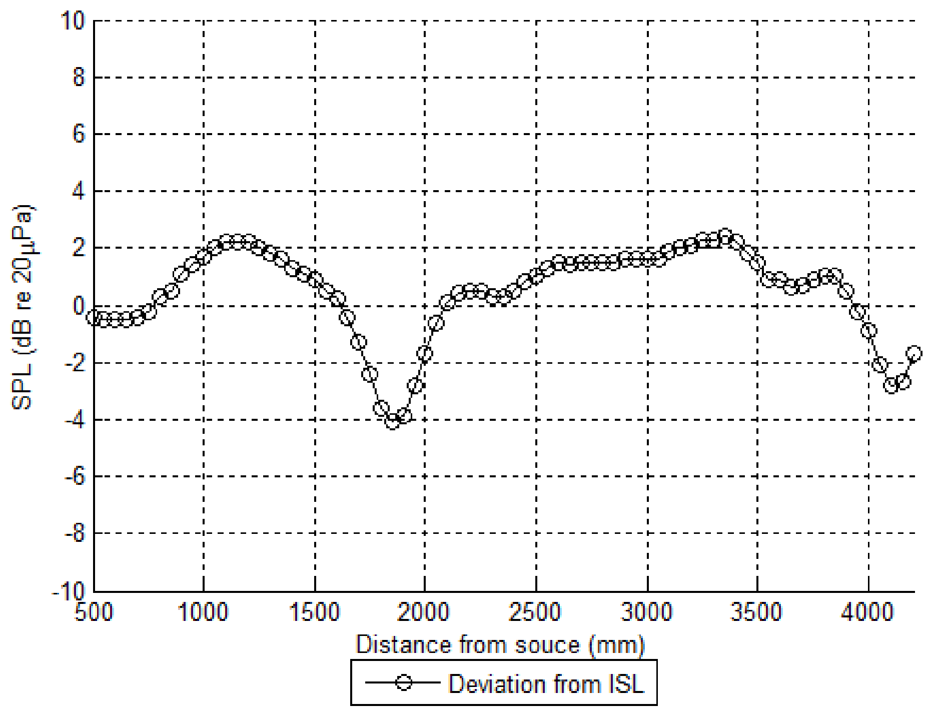

Figure A.5.—East Horizontal Traverse Mid Frequency, 400 Hz, Pure Tones

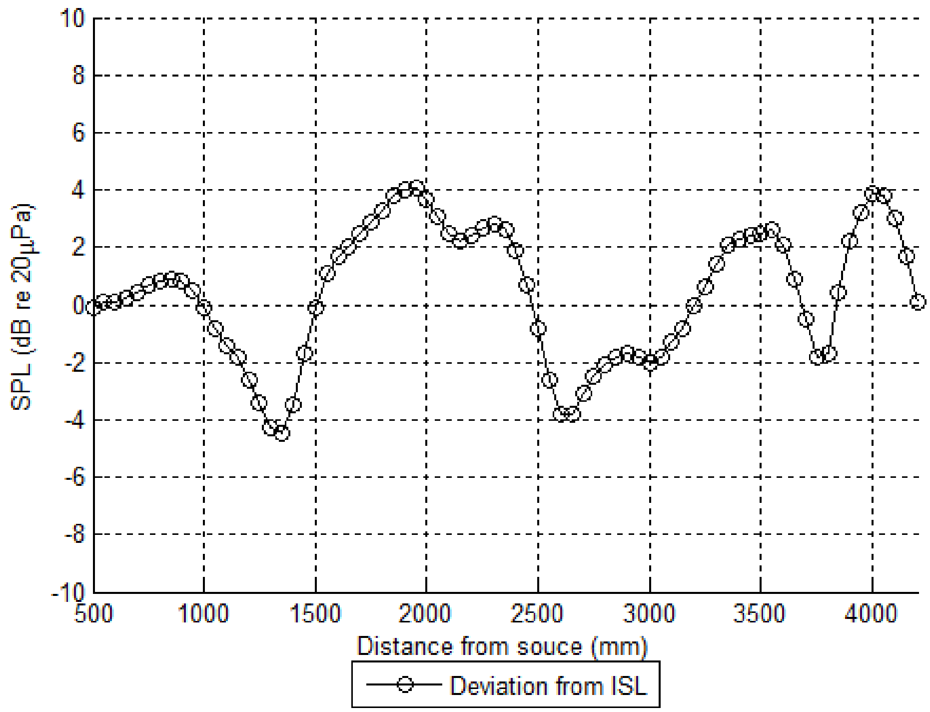

Figure A.6.—East Horizontal Traverse Mid Frequency, 500 Hz, Pure Tones

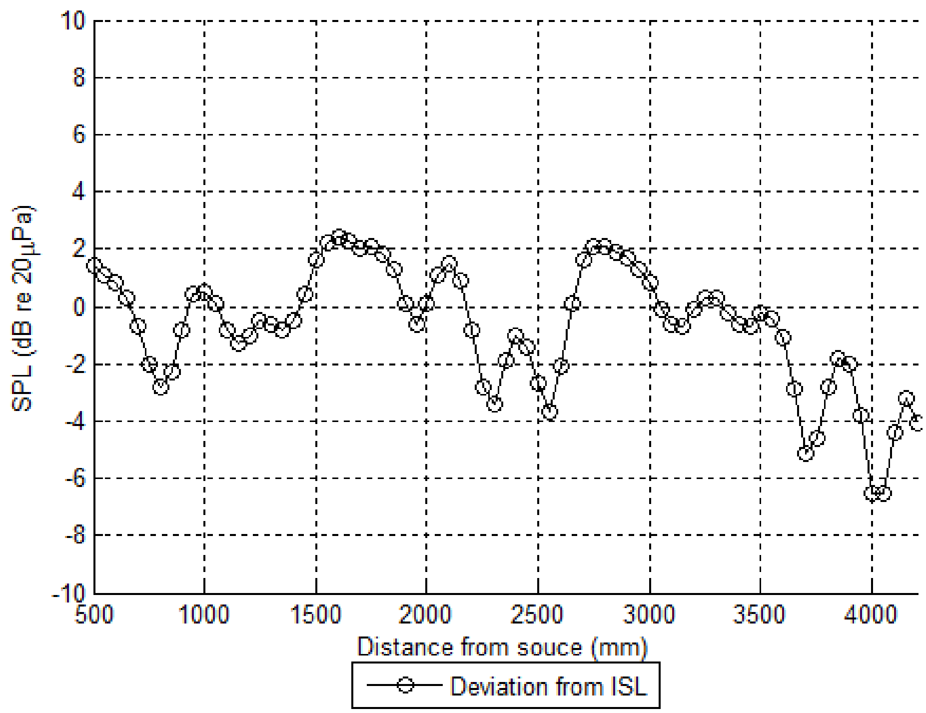

Figure A.7.—East Horizontal Traverse Mid Frequency, 630 Hz, Pure Tones

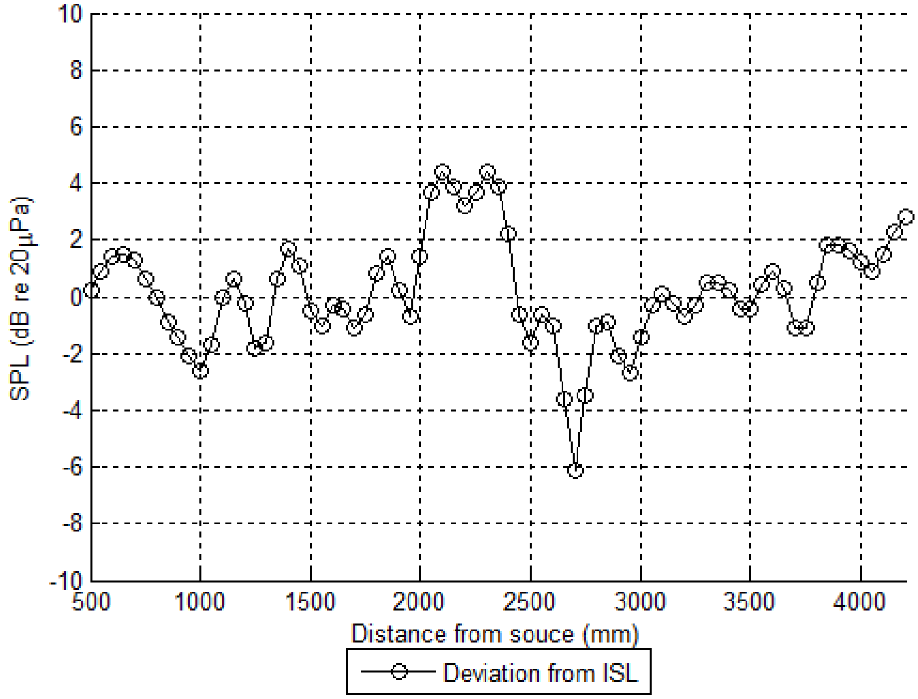

Figure A.8.—East Horizontal Traverse Mid Frequency, 800 Hz, Pure Tones

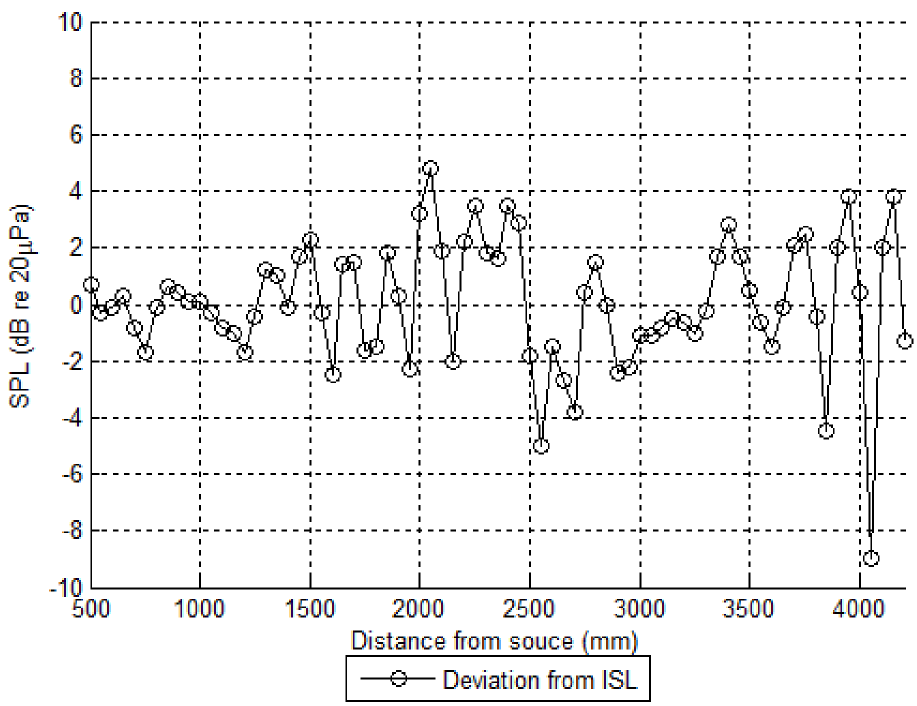

Figure A.9.—East Horizontal Traverse Mid Frequency, 1,000 Hz, Pure Tones

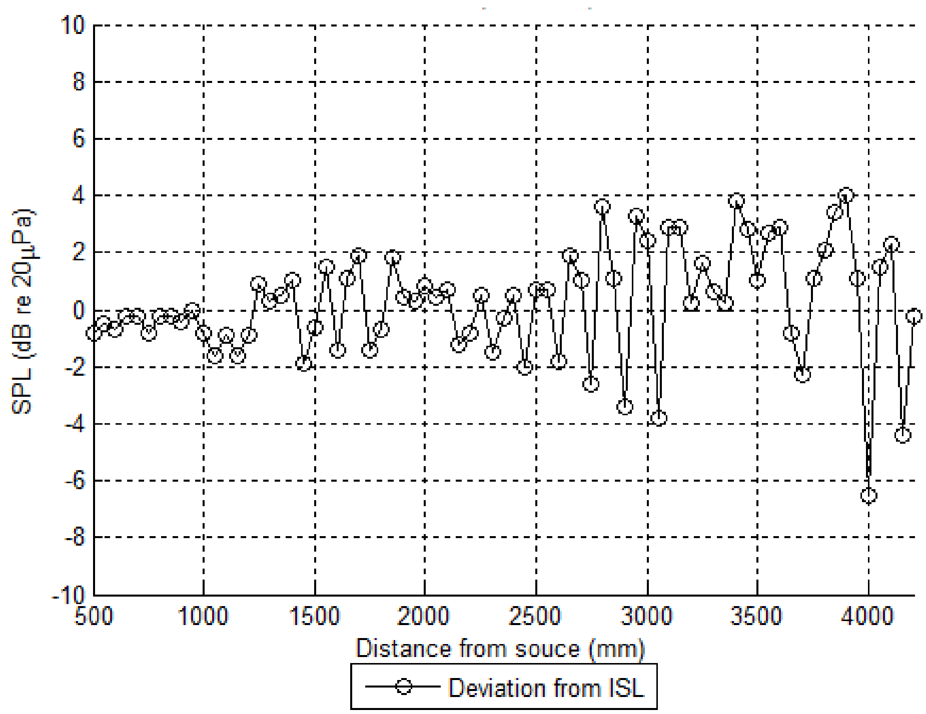

Figure A.10.—East Horizontal Traverse Mid Frequency, 1,250 Hz, Pure Tones

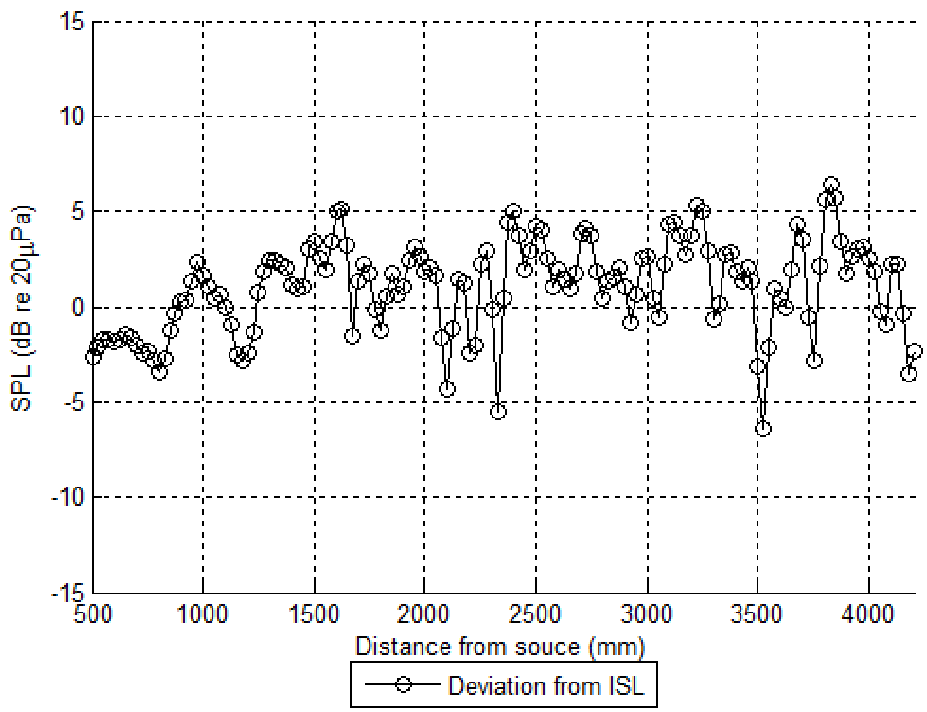

Figure A.11.—East Horizontal Traverse High Frequency, 1,600 Hz, Pure Tones

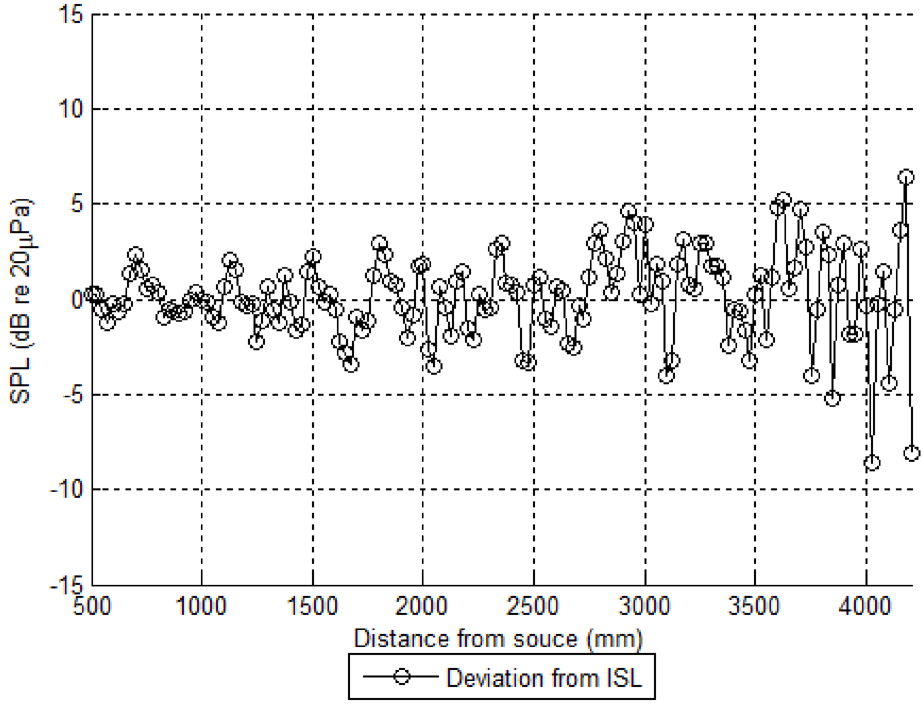

Figure A.12.—East Horizontal Traverse High Frequency, 2,000 Hz, Pure Tones

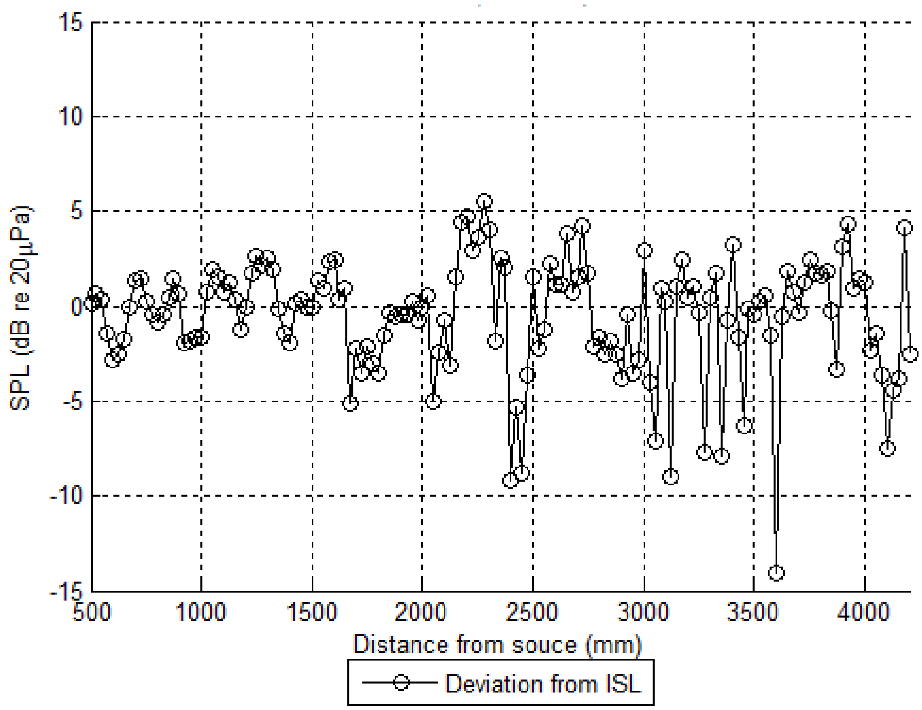

Figure A.13.—East Horizontal Traverse High Frequency, 2,500 Hz, Pure Tones

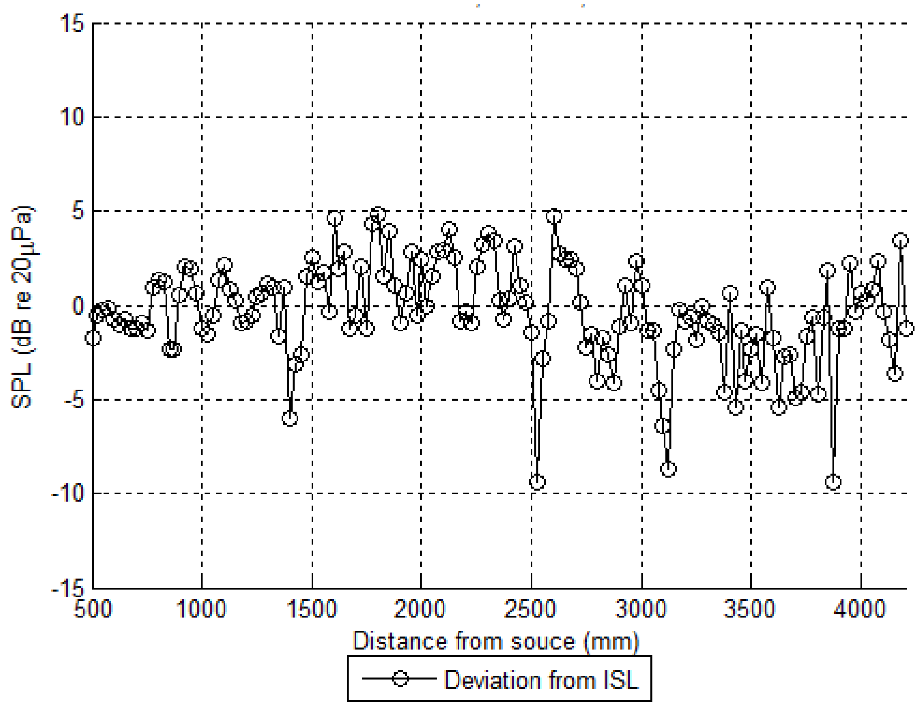

Figure A.14.—East Horizontal Traverse High Frequency, 3,150 Hz, Pure Tones

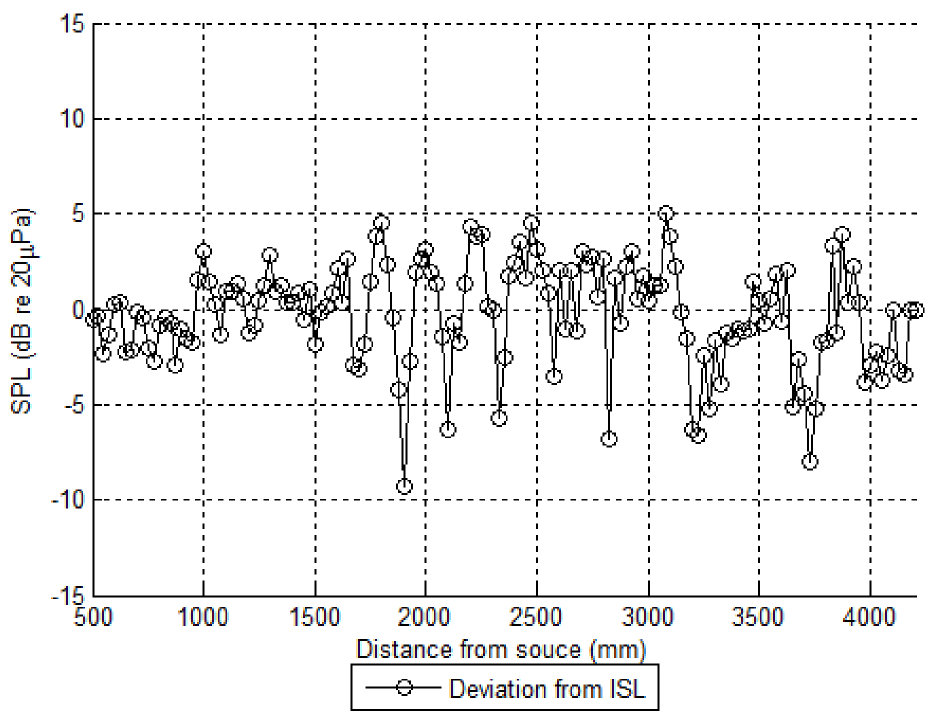

Figure A.15.—East Horizontal Traverse High Frequency, 4,000 Hz, Pure Tones

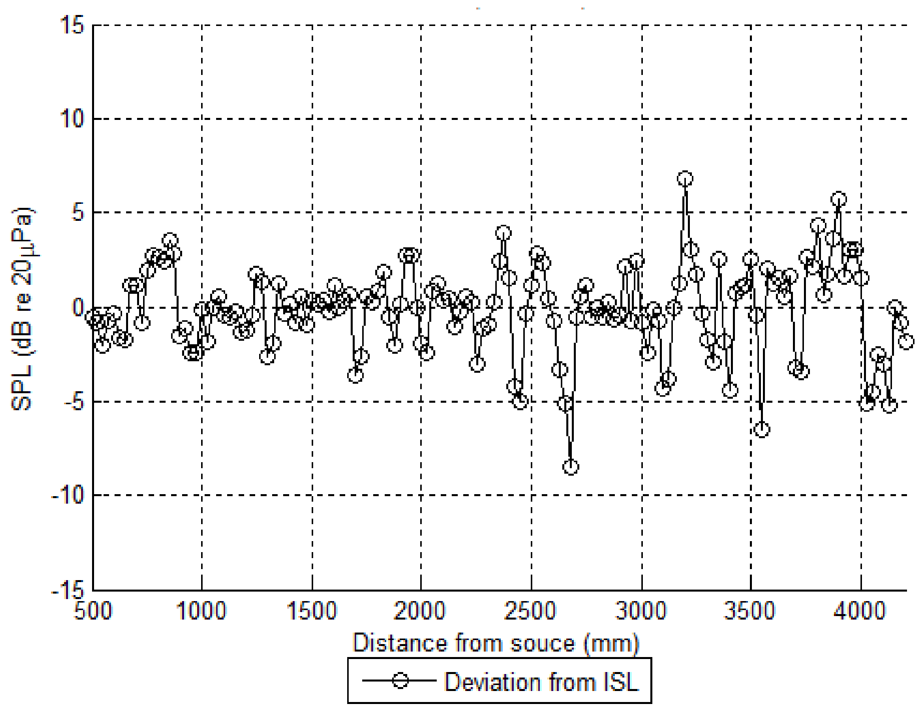

Figure A.16.—East Horizontal Traverse High Frequency, 5,000 Hz, Pure Tones

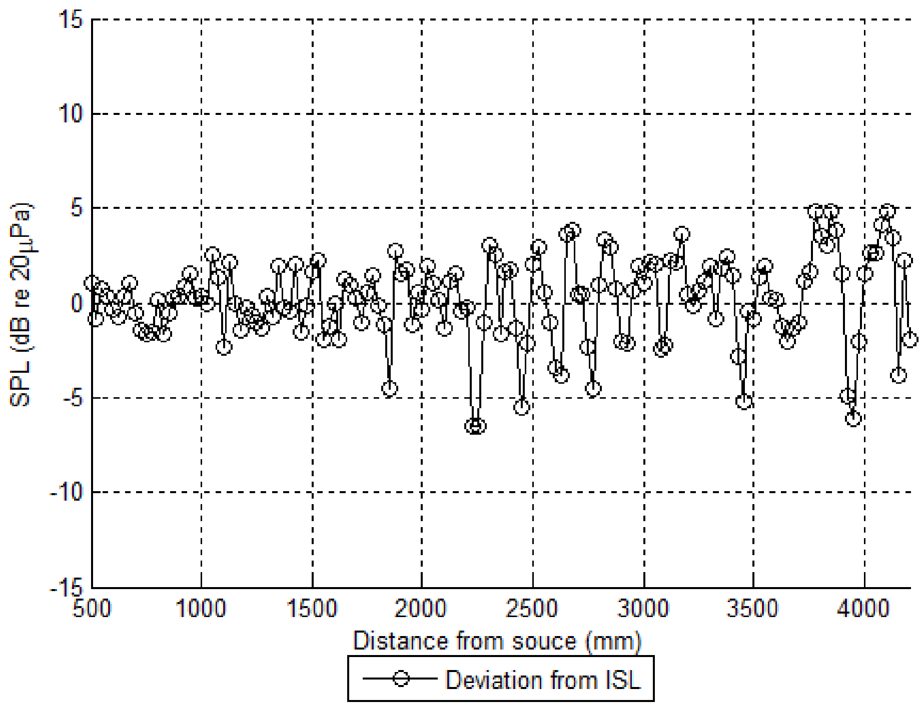

Figure A.17.—East Horizontal Traverse High Frequency, 6,300 Hz, Pure Tones

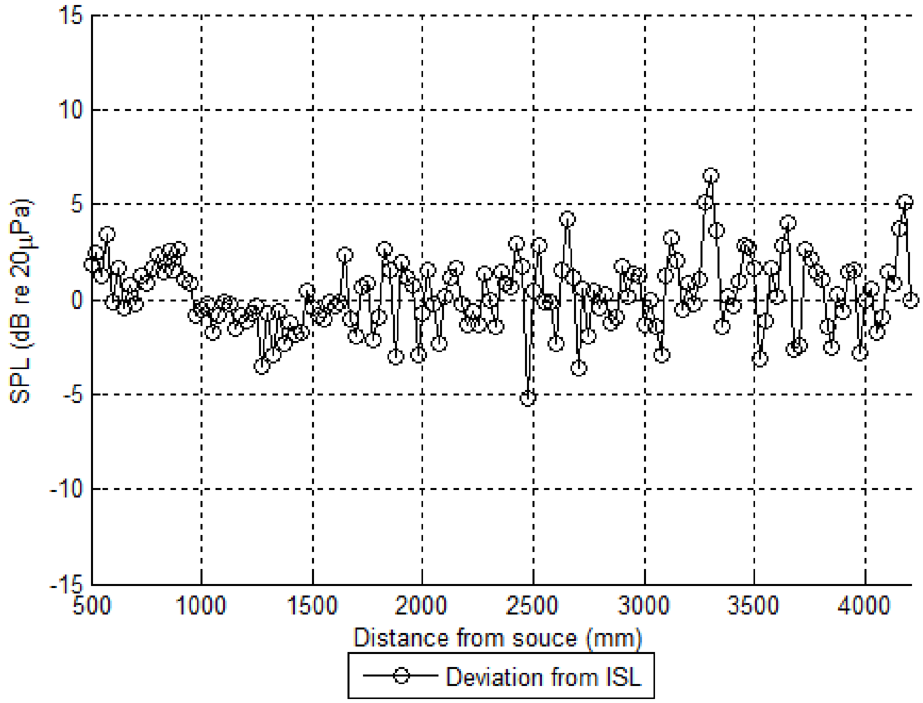

Figure A.18.—East Horizontal Traverse High Frequency, 8,000 Hz, Pure Tones

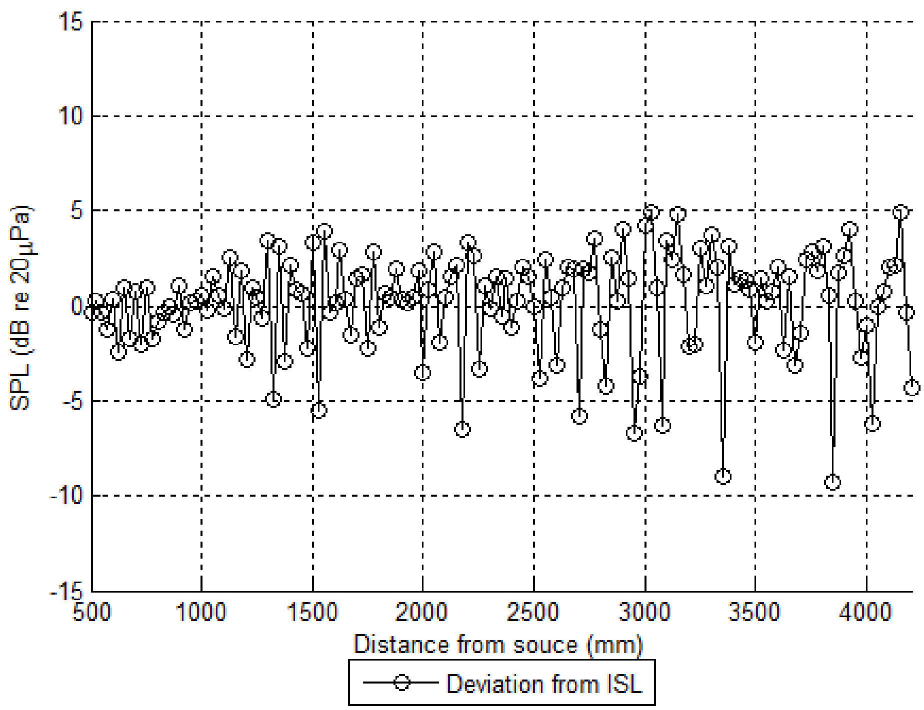

Figure A.19.—East Horizontal Traverse High Frequency, 10,000 Hz, Pure Tones

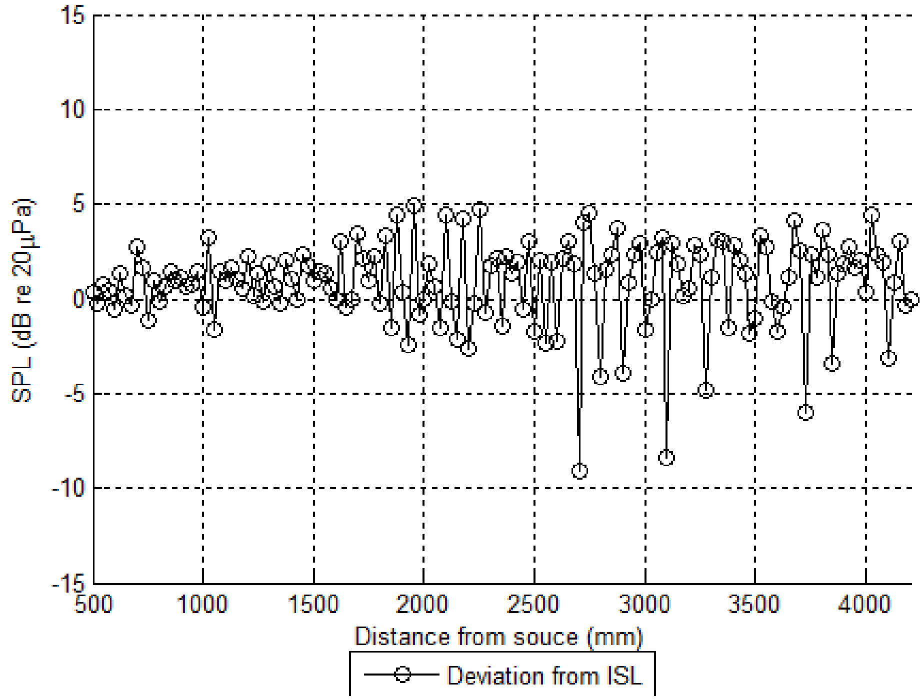

Figure A.20.—East Horizontal Traverse High Frequency, 12,500 Hz, Pure Tones

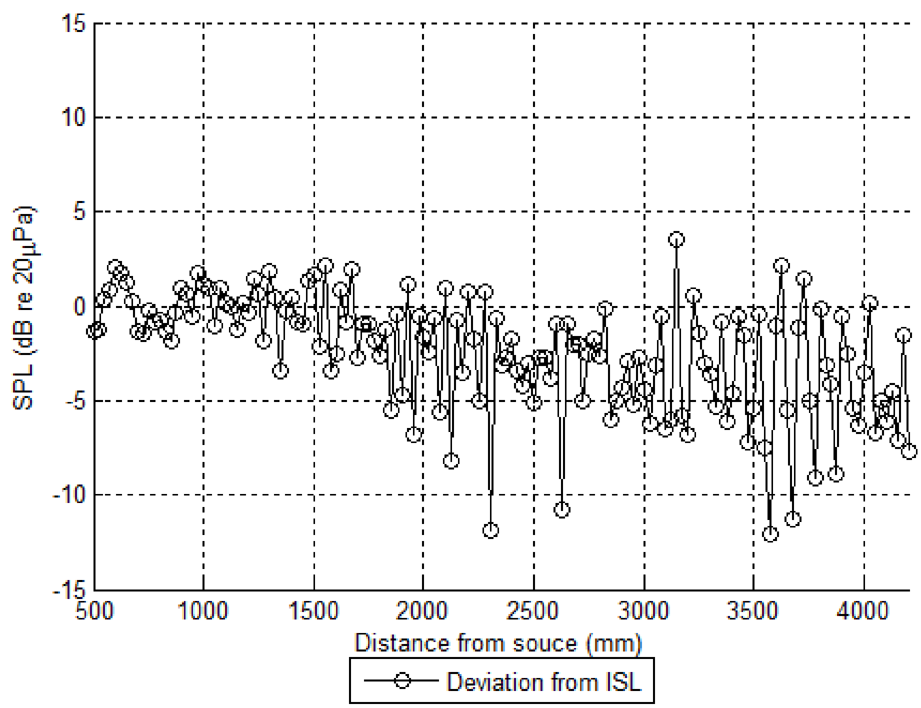

Figure A.21.—East Horizontal Traverse High Frequency, 16,000 Hz, Pure Tones

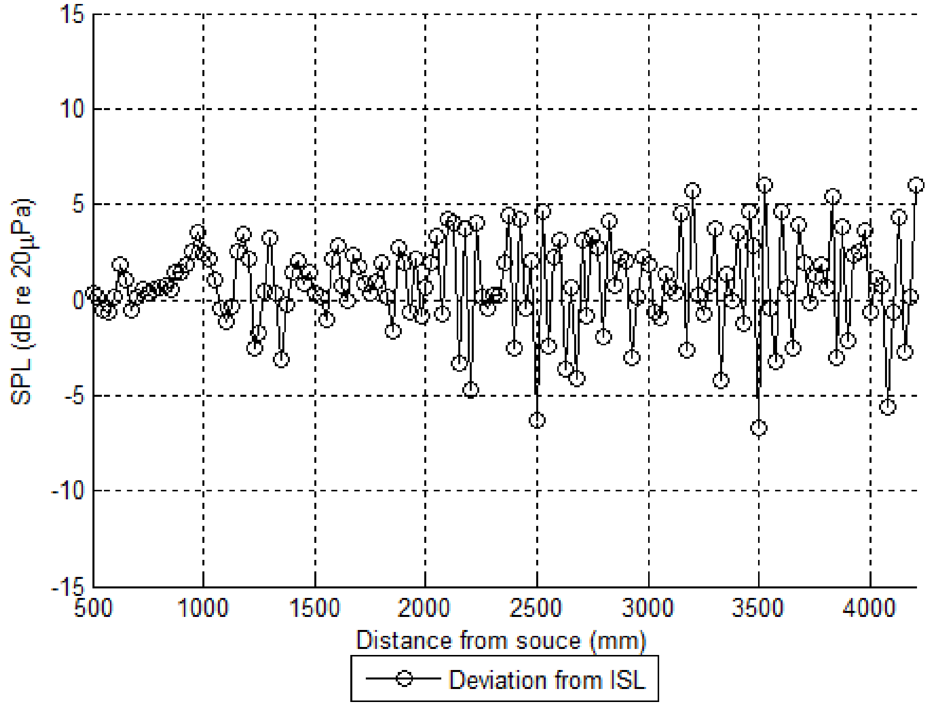

Figure A.22.—East Horizontal Traverse High Frequency, 20,000 Hz, Pure Tones

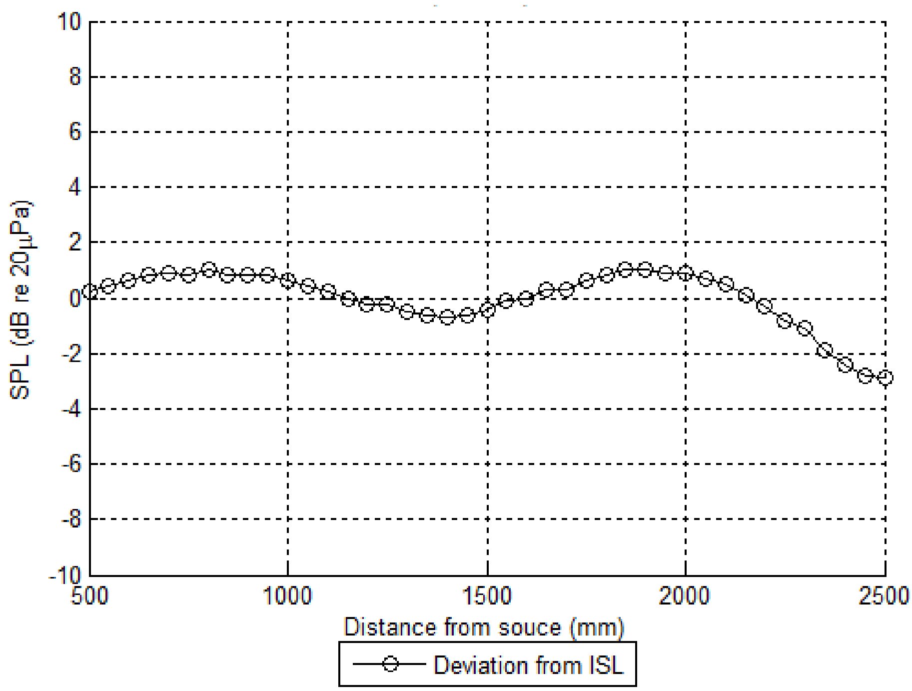

Figure A.23.—North Horizontal Mid Frequency, 160 Hz, Pure Tones

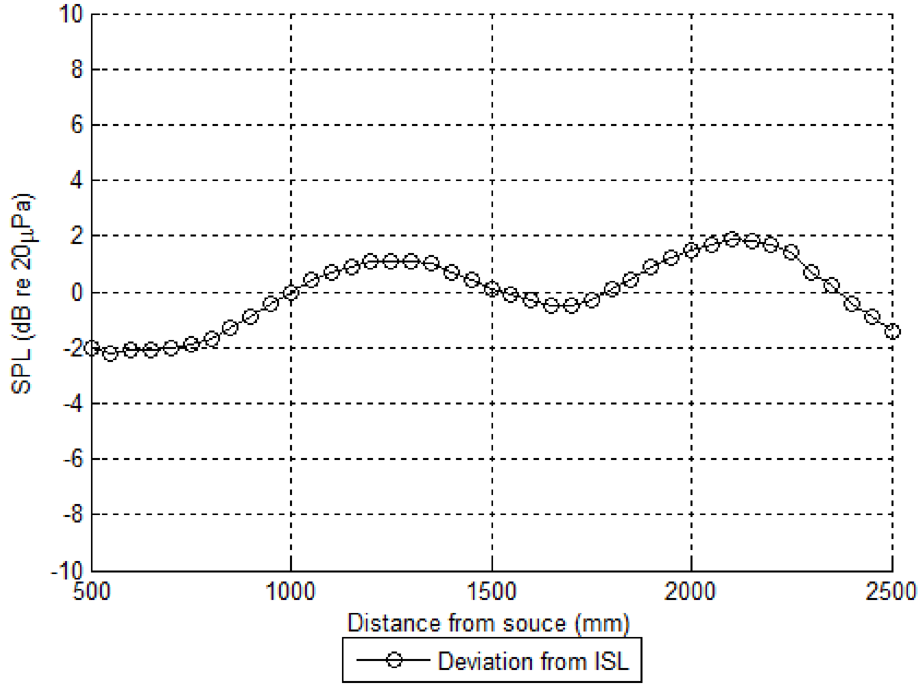

Figure A.24.—North Horizontal Mid Frequency, 200 Hz, Pure Tones

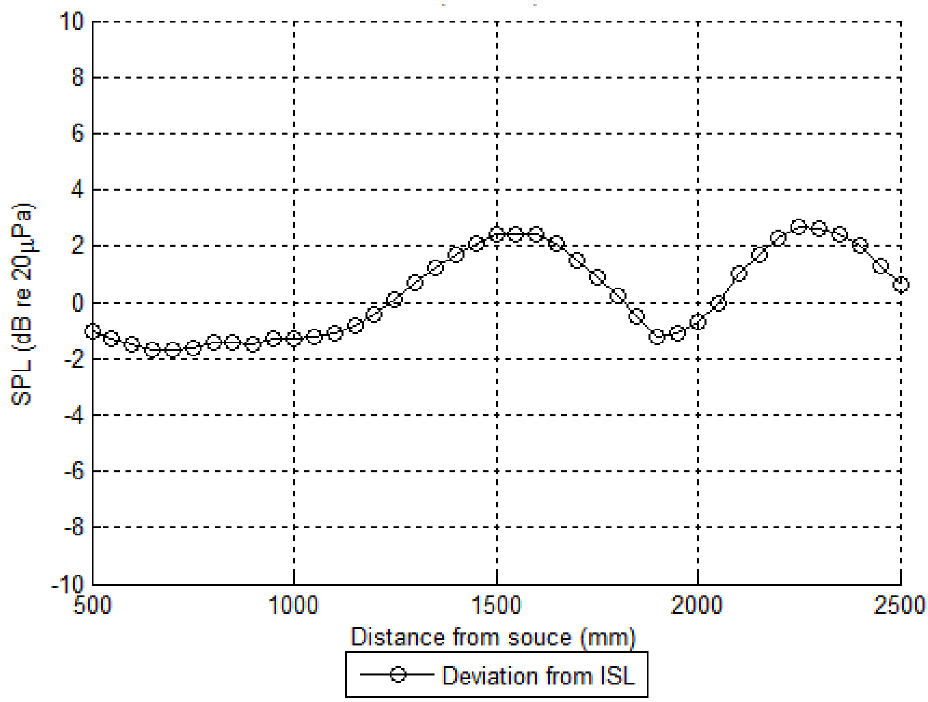

Figure A.25.—North Horizontal Mid Frequency, 250 Hz, Pure Tones

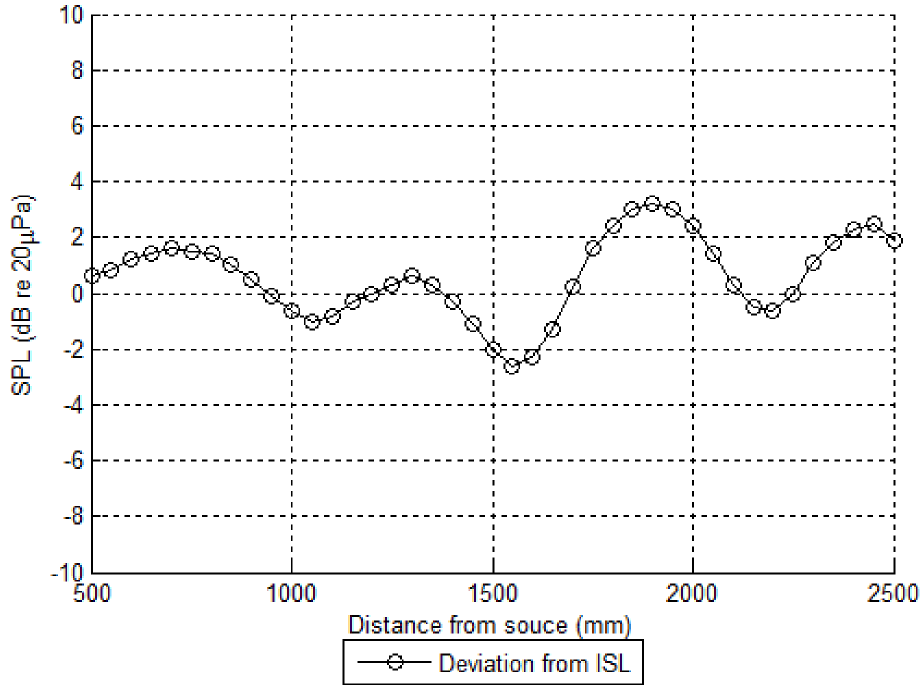

Figure A.26.—North Horizontal Mid Frequency, 315 Hz, Pure Tones

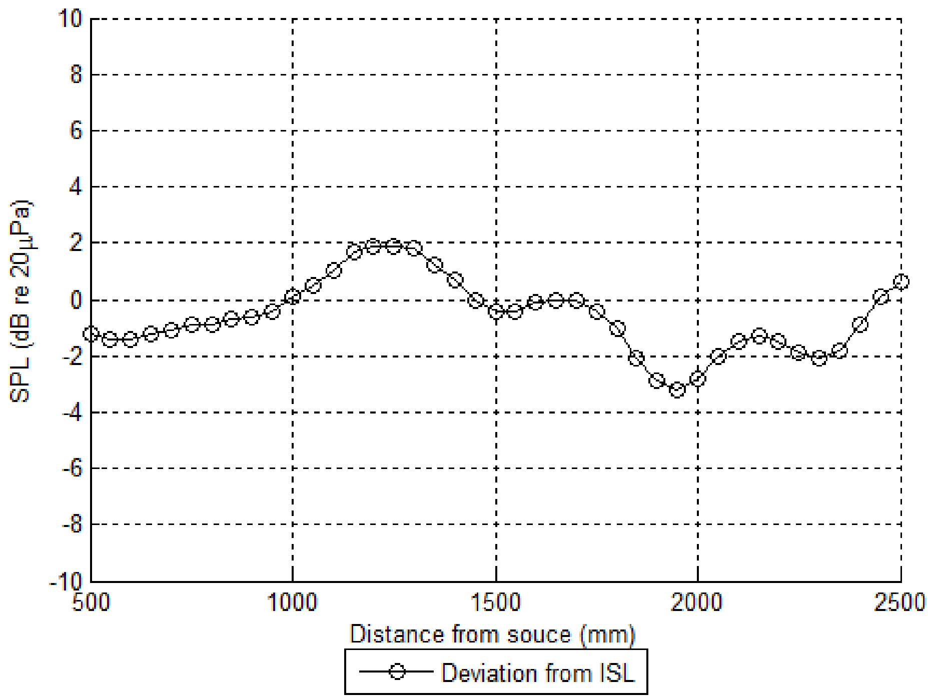

Figure A.27.—North Horizontal Mid Frequency, 400 Hz, Pure Tones

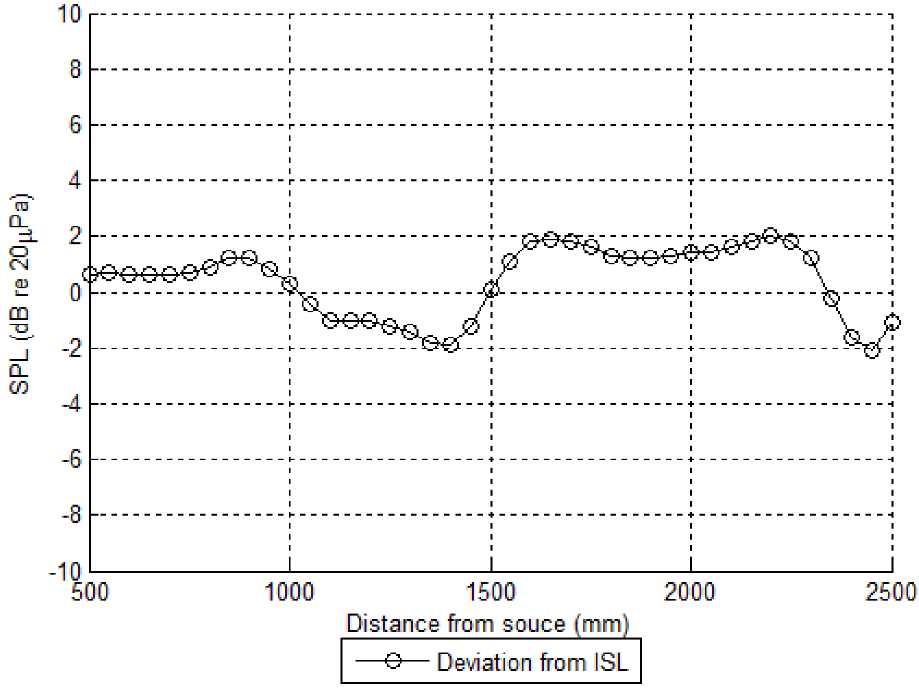

Figure A.28.—North Horizontal Mid Frequency, 500 Hz, Pure Tones

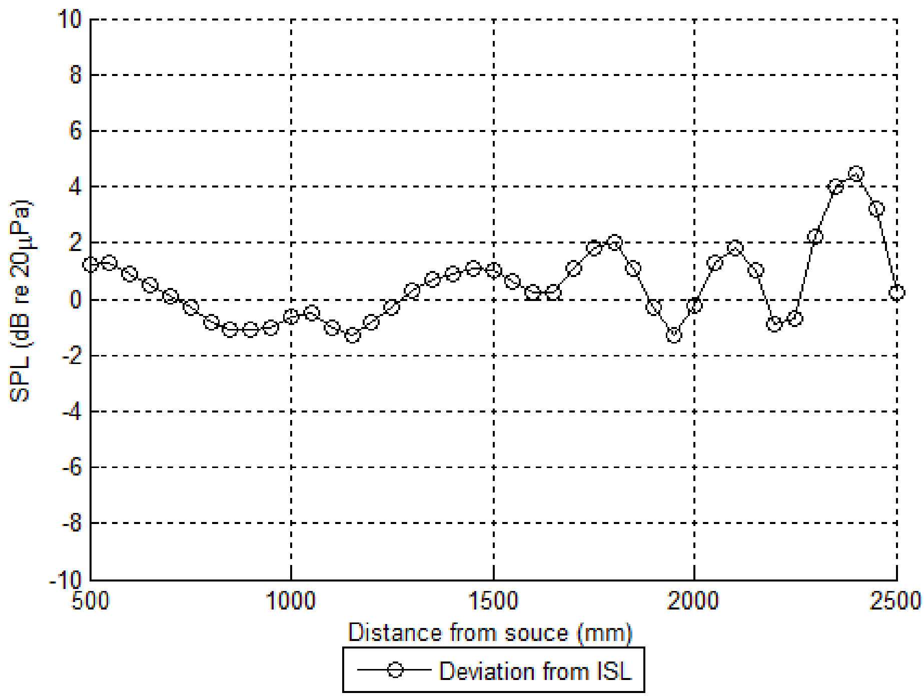

Figure A.29.—North Horizontal Mid Frequency, 630 Hz, Pure Tones

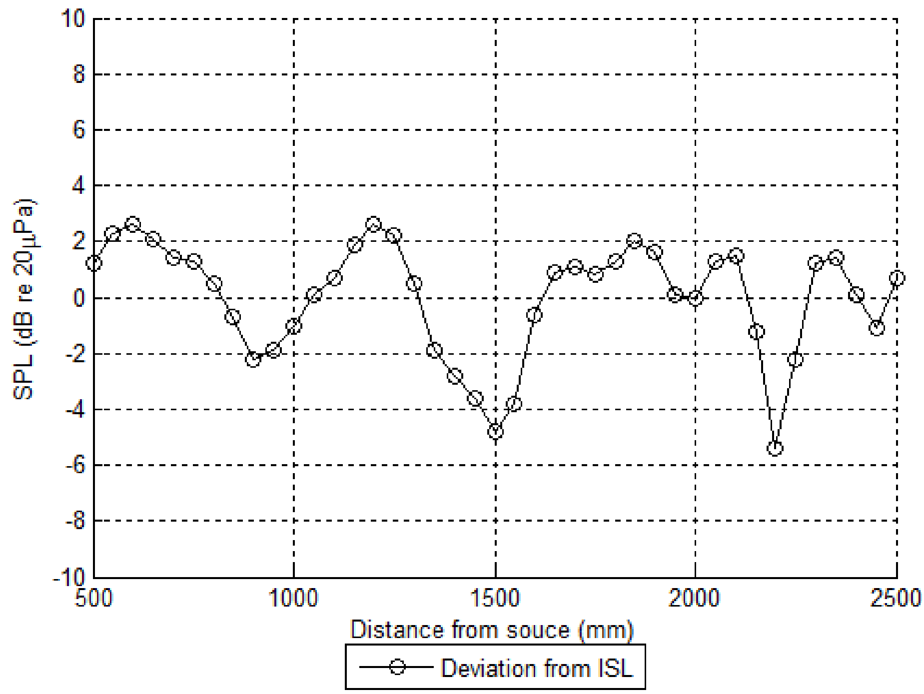

Figure A.30.—North Horizontal Mid Frequency, 800 Hz, Pure Tones

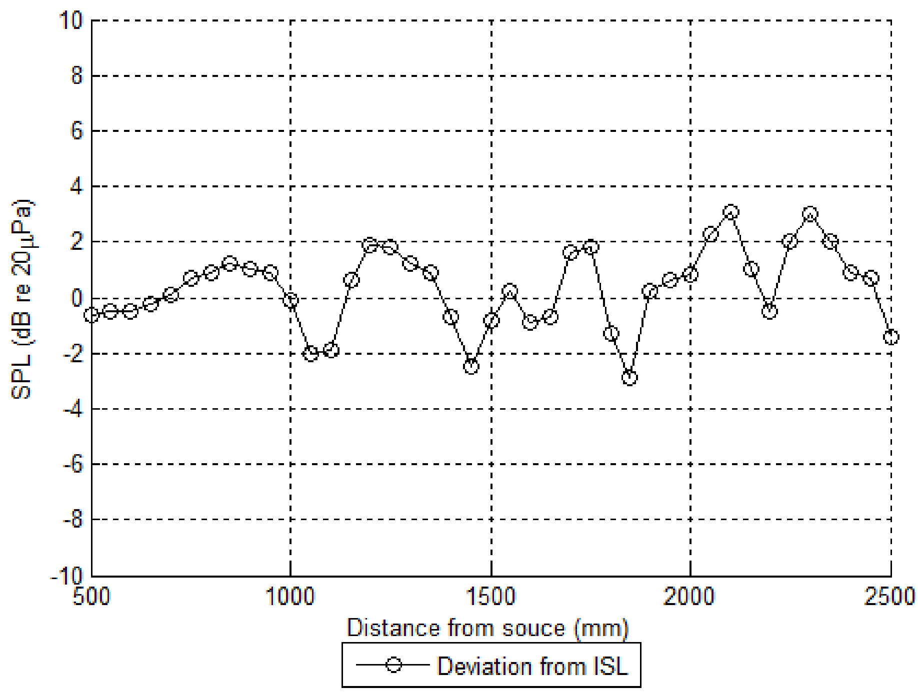

Figure A.31.—North Horizontal Mid Frequency, 1,000 Hz, Pure Tones

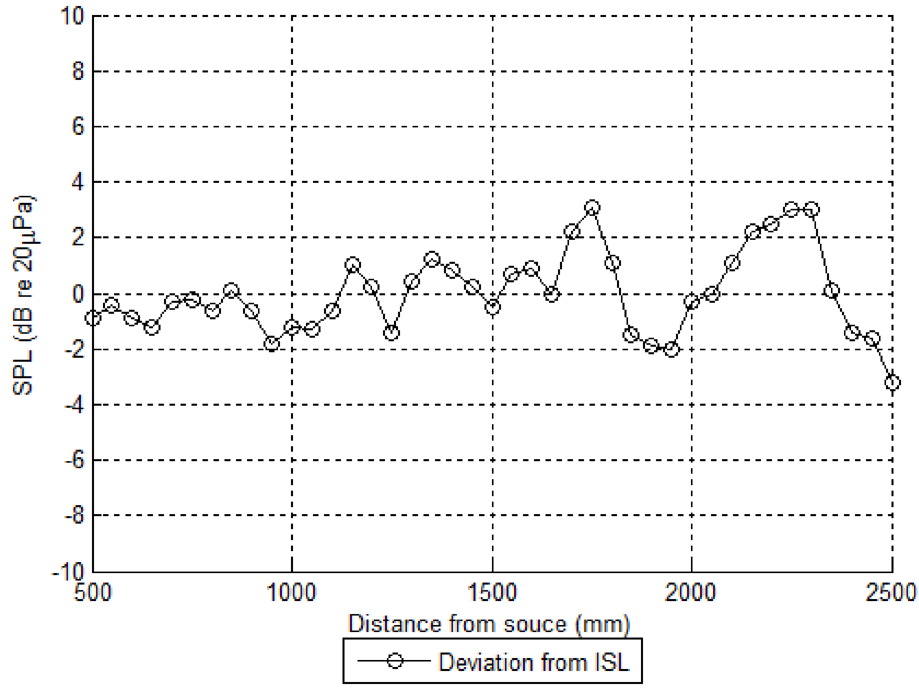

Figure A.32.—North Horizontal Mid Frequency, 1,250 Hz, Pure Tones

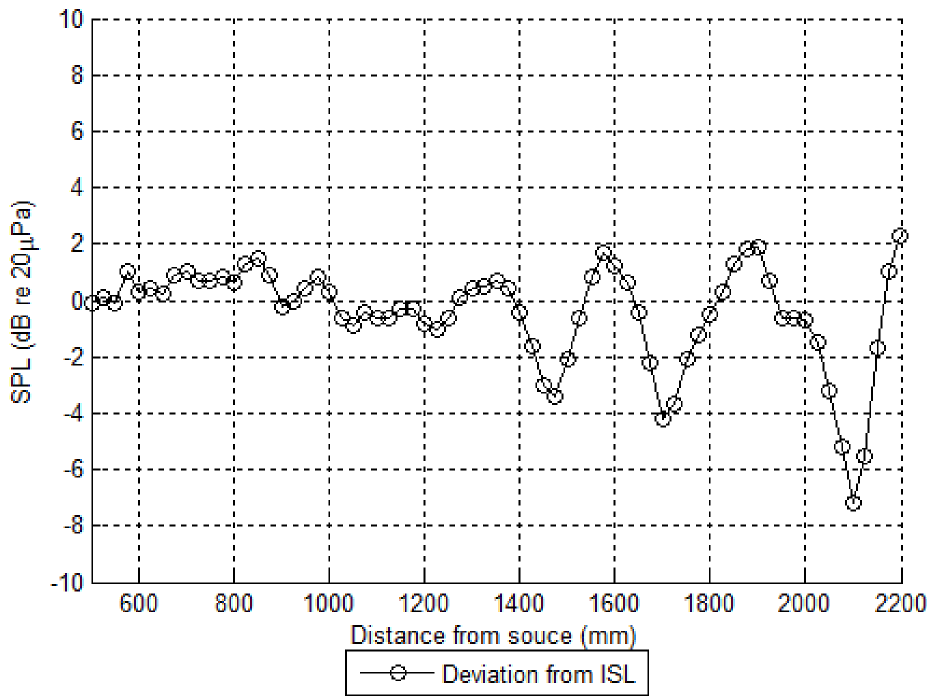

Figure A.33.—North Horizontal Wall Traverse High Frequency, 1,600 Hz, Pure Tones

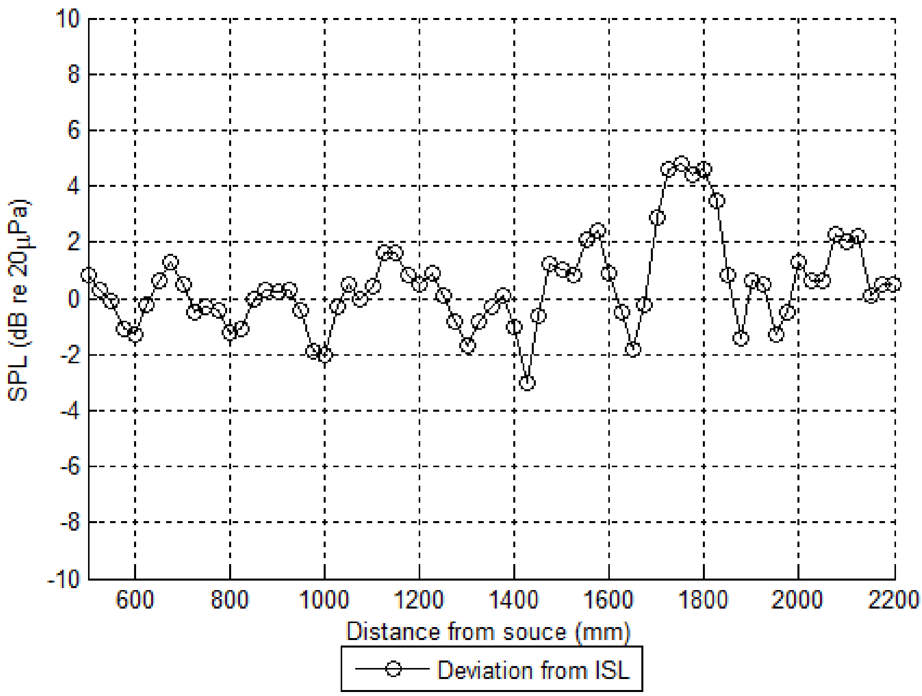

Figure A.34.—North Horizontal Wall Traverse High Frequency, 2,000 Hz, Pure Tones

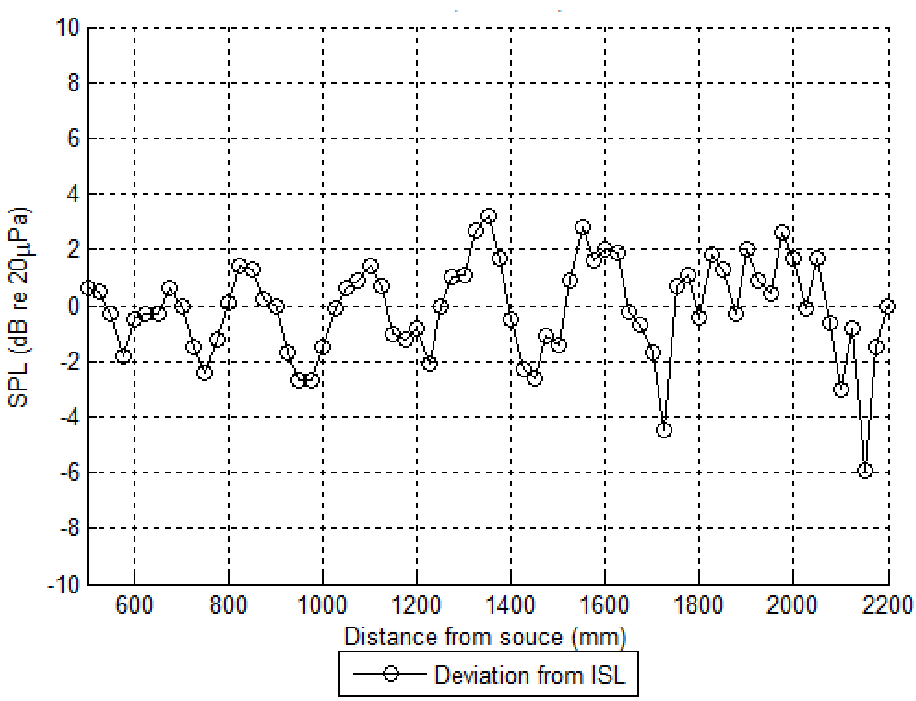

Figure A.35.—North Horizontal Wall Traverse High Frequency, 2,500 Hz, Pure Tones

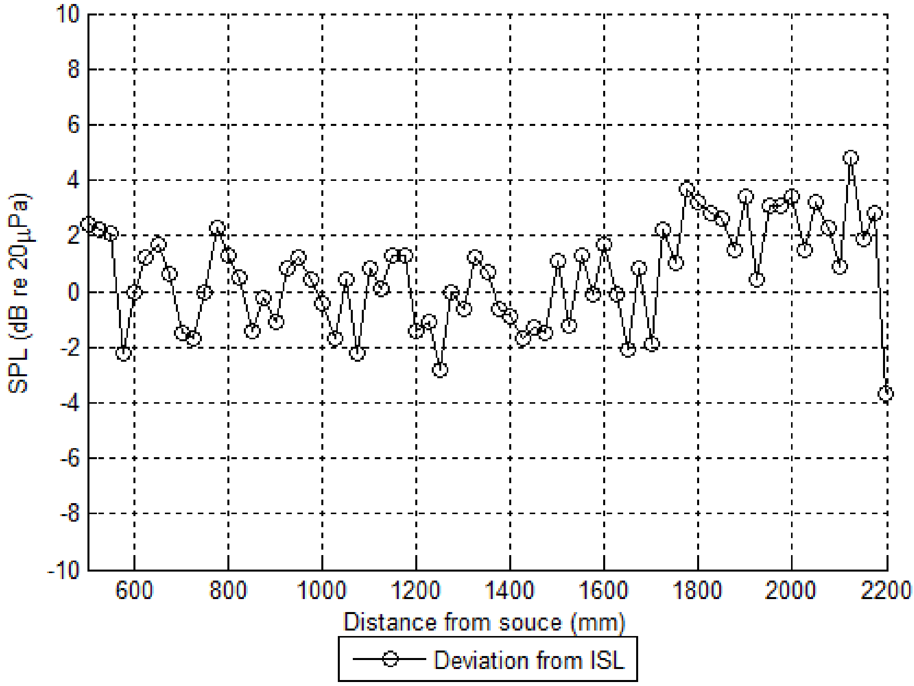

Figure A.36.—North Horizontal Wall Traverse High Frequency, 3,150 Hz, Pure Tones

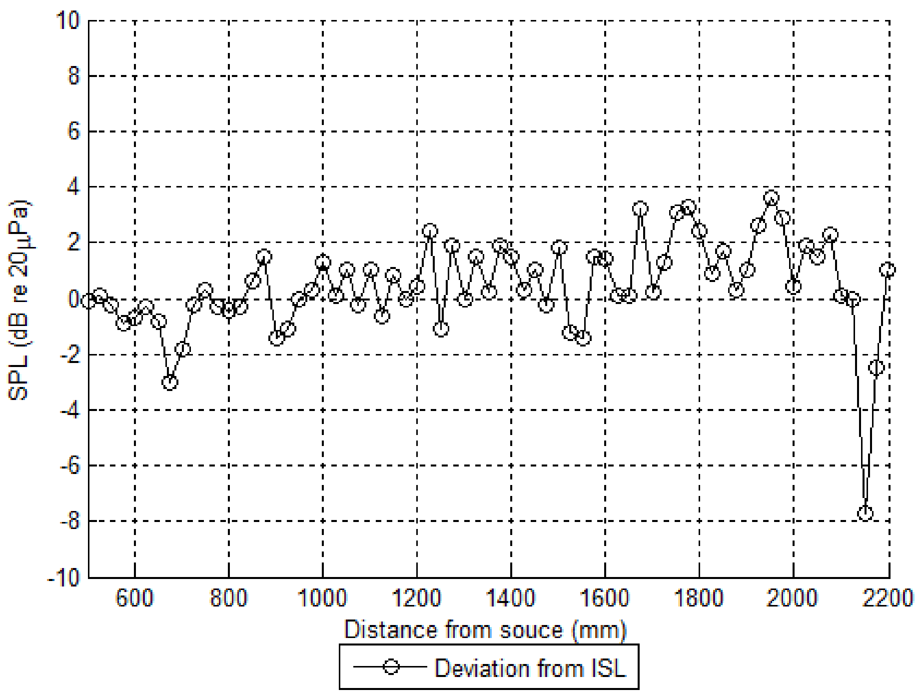

Figure A.37.—North Horizontal Wall Traverse High Frequency, 4,000 Hz, Pure Tones

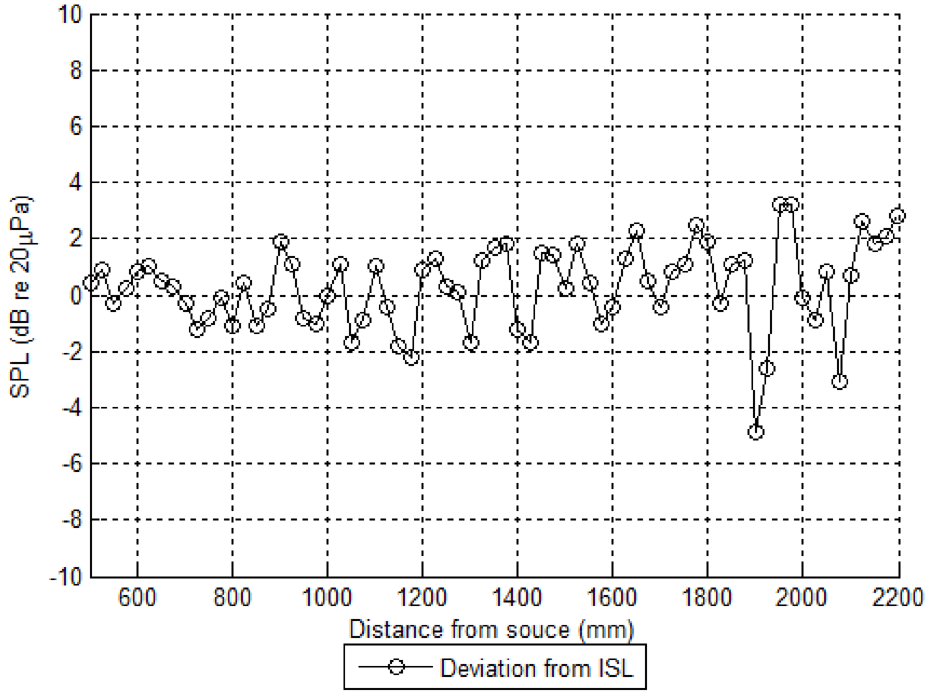

Figure A.38.—North Horizontal Wall Traverse High Frequency, 5,000 Hz, Pure Tones

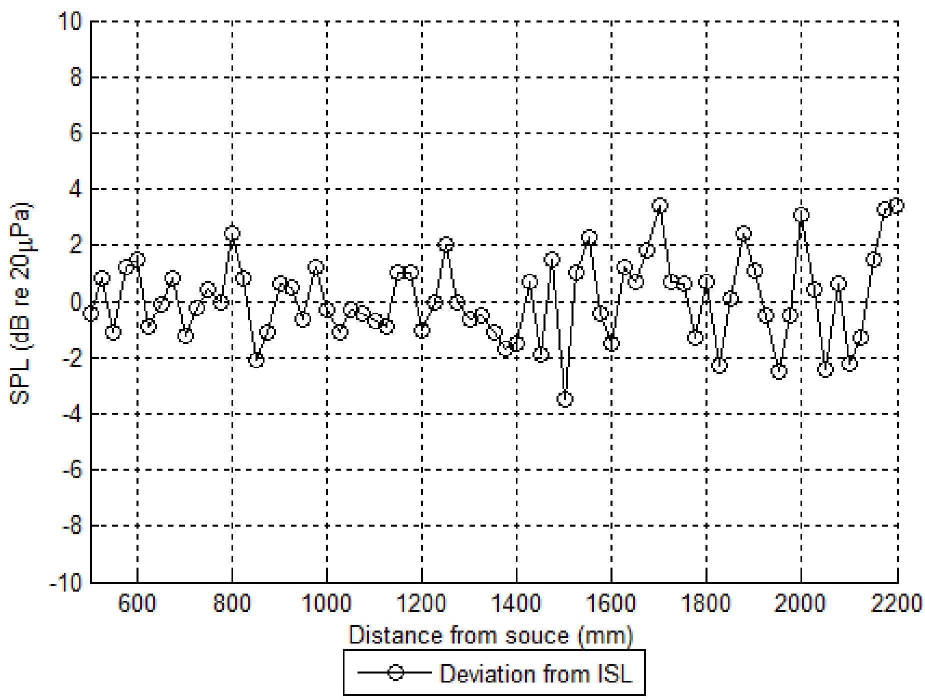

Figure A.39.—North Horizontal Wall Traverse High Frequency, 6,300 Hz, Pure Tones

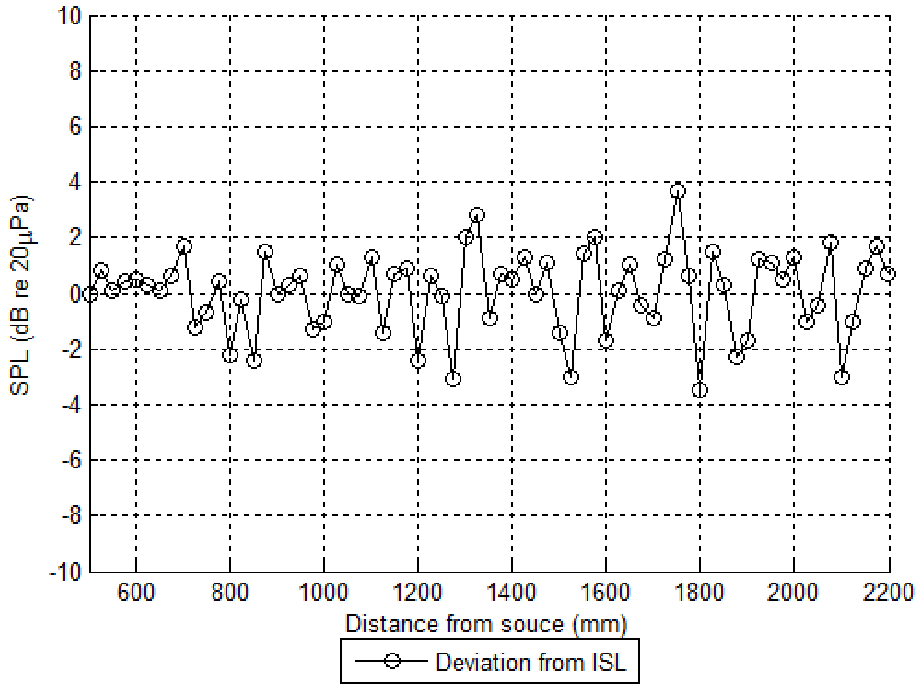

Figure A.40.—North Horizontal Wall Traverse High Frequency, 8,000 Hz, Pure Tones

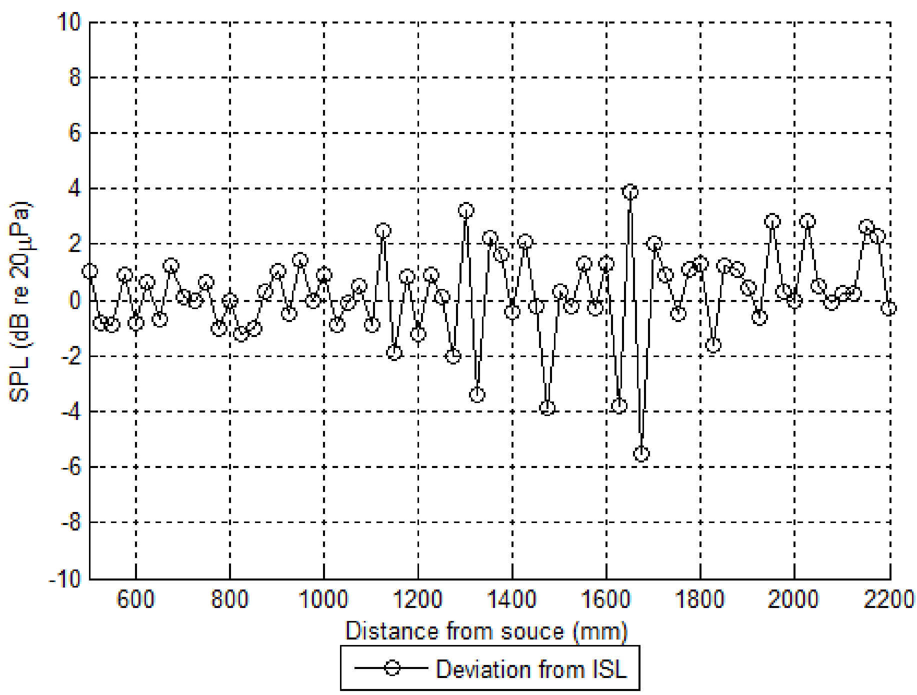

Figure A.41.—North Horizontal Wall Traverse High Frequency, 10,000 Hz, Pure Tones

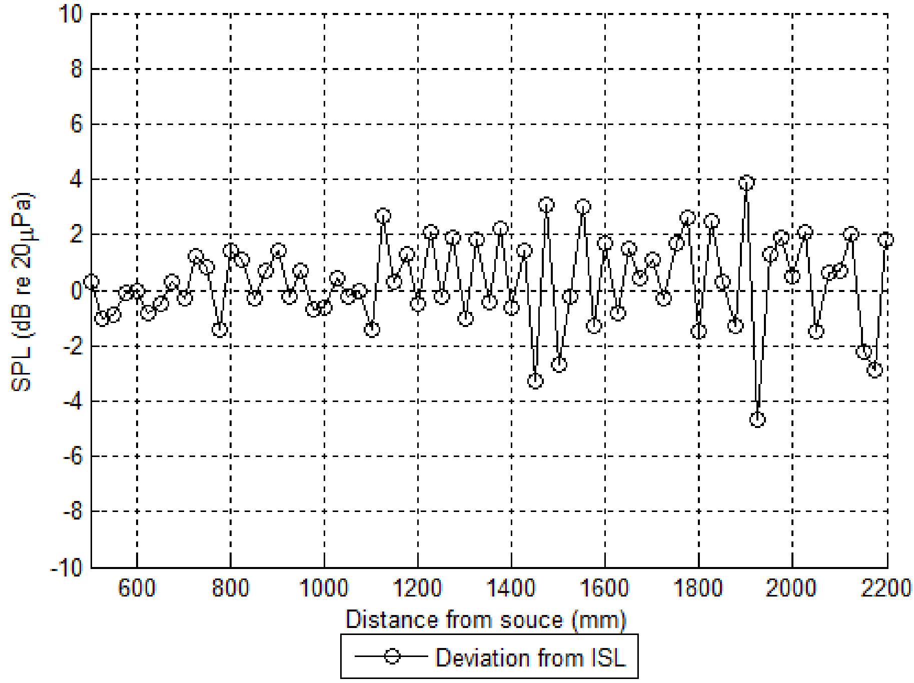

Figure A.42.—North Horizontal Wall Traverse High Frequency, 12,500 Hz, Pure Tones

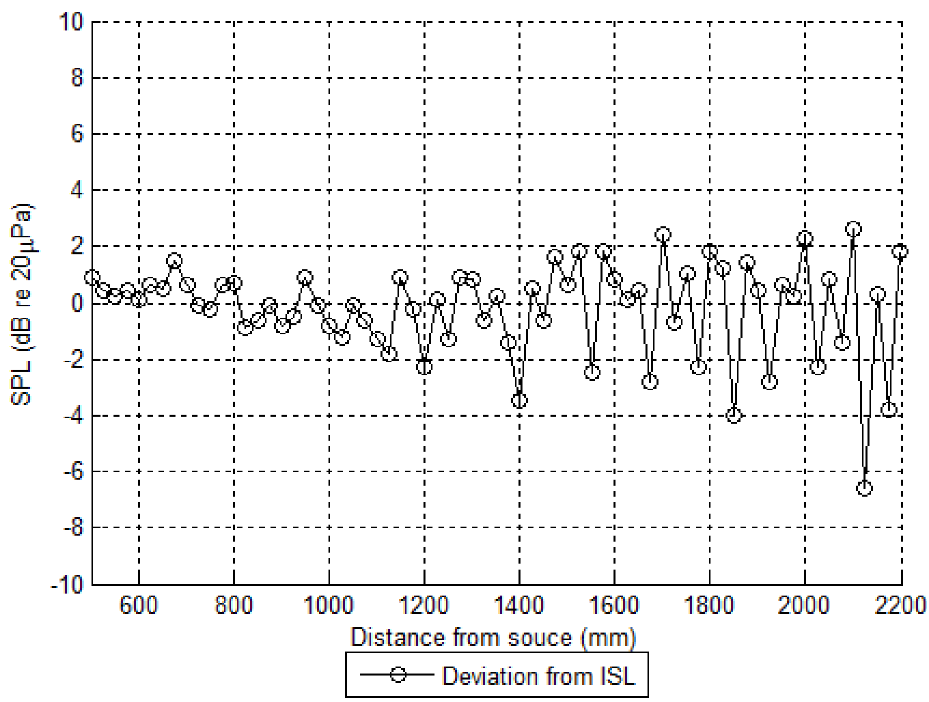

Figure A.43.—North Horizontal Wall Traverse High Frequency, 16,000 Hz, Pure Tones

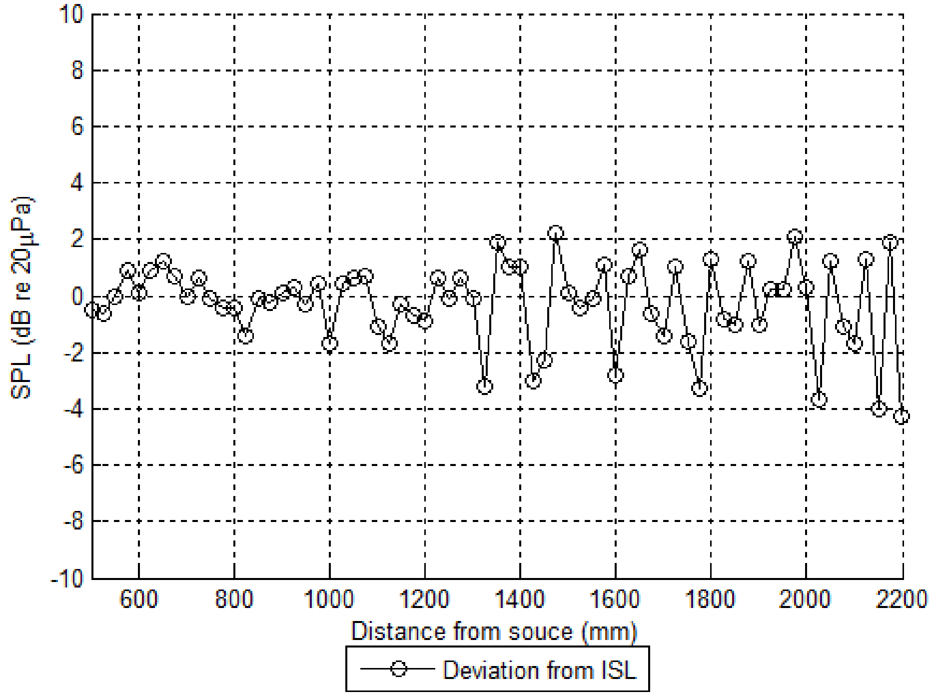

Figure A.44.—North Horizontal Wall Traverse High Frequency, 20,000 Hz, Pure Tones

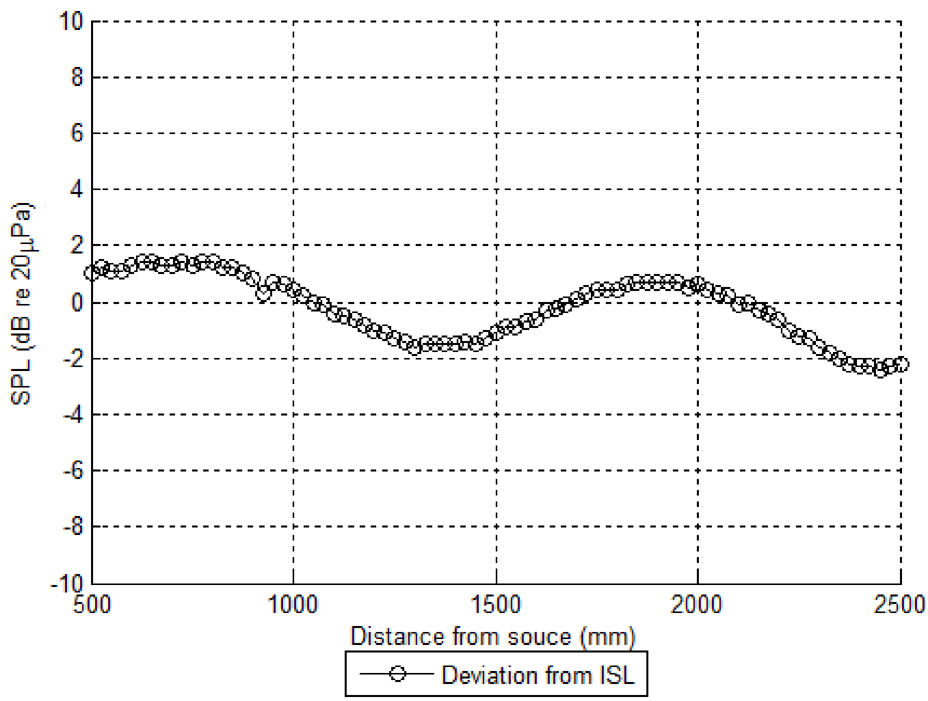

Figure A.45.—North Wall Upper Dihedral Traverse Mid Frequency, 160 Hz, Pure Tones

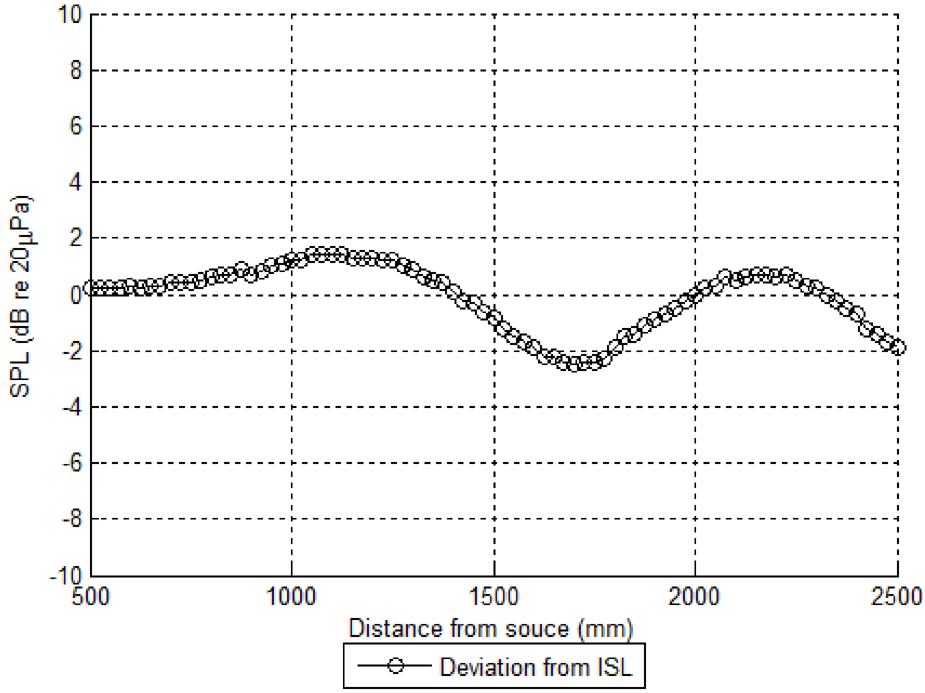

Figure A.46.—North Wall Upper Dihedral Traverse Mid Frequency, 200 Hz, Pure Tones

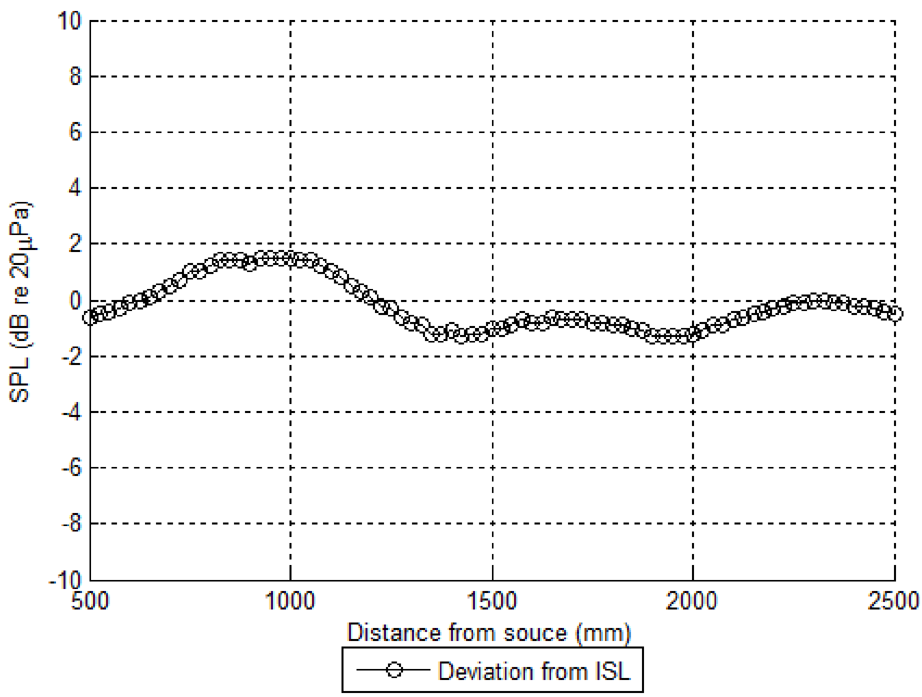

Figure A.47.—North Wall Upper Dihedral Traverse Mid Frequency, 250 Hz, Pure Tones

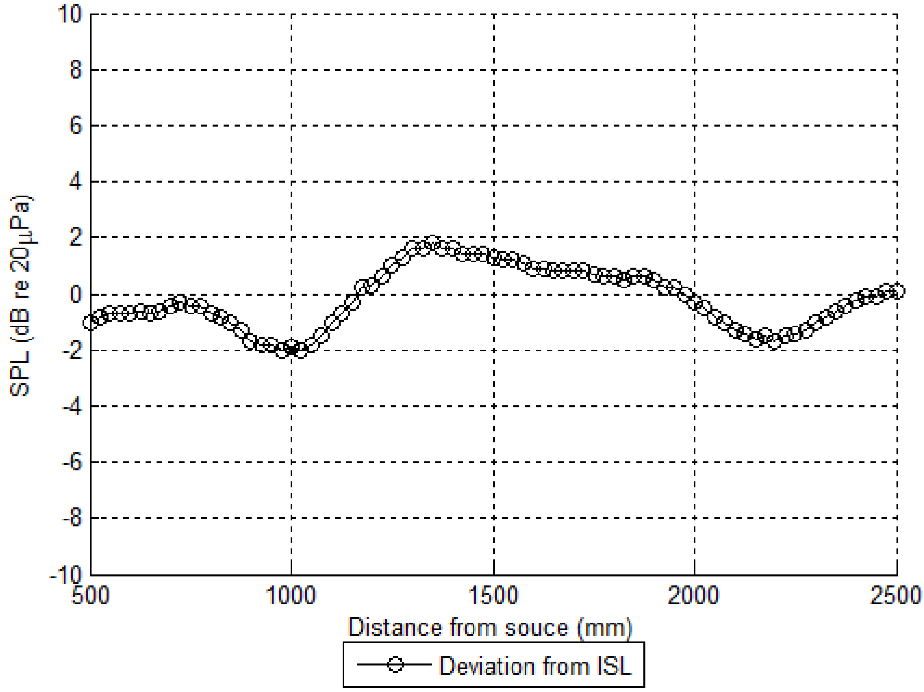

Figure A.48.—North Wall Upper Dihedral Traverse Mid Frequency, 315 Hz, Pure Tones

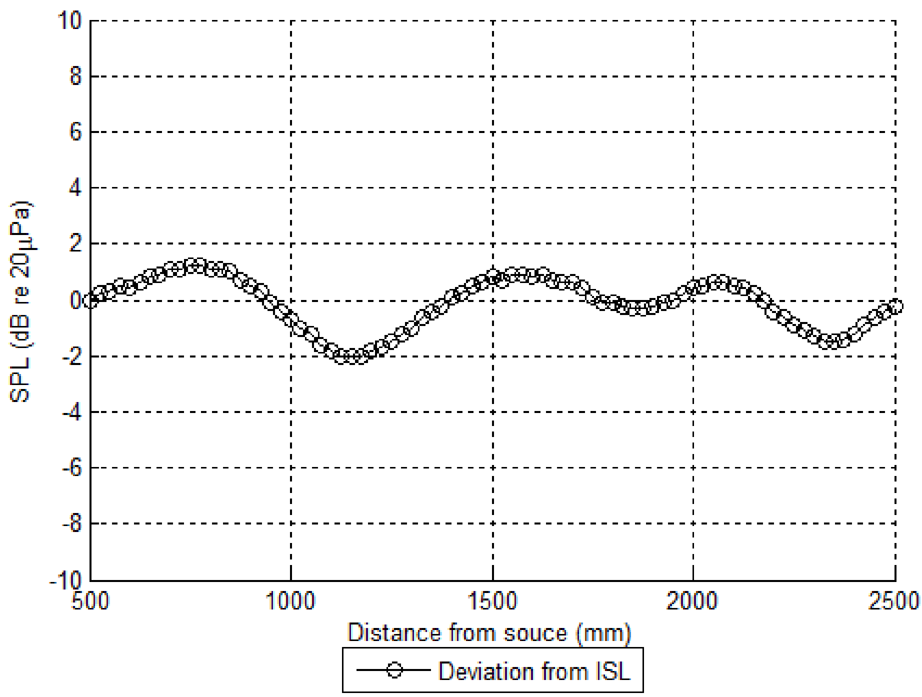

Figure A.49.—North Wall Upper Dihedral Traverse Mid Frequency, 400 Hz, Pure Tones

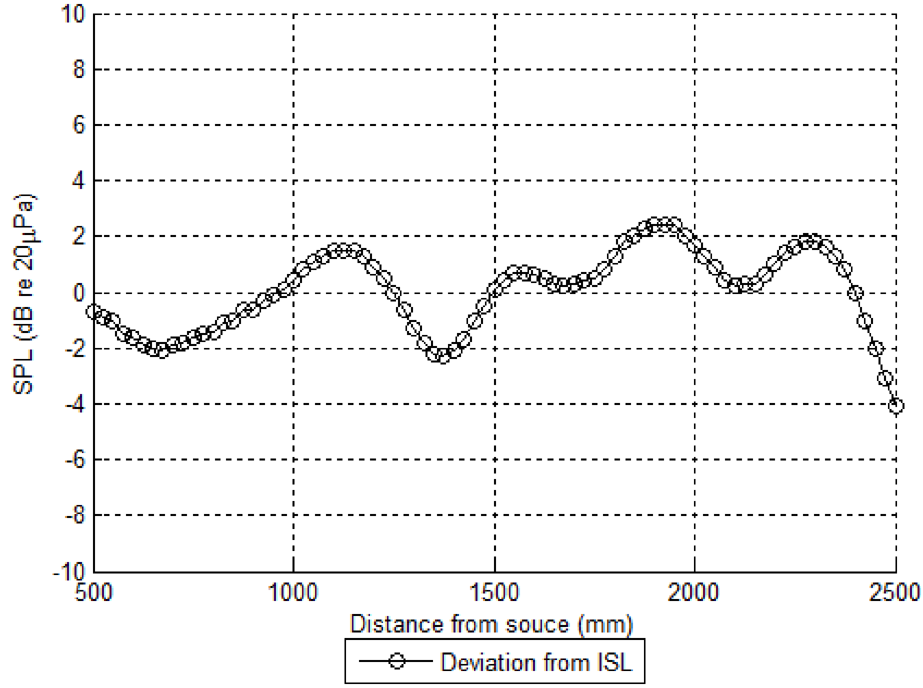

Figure A.50.—North Wall Upper Dihedral Traverse Mid Frequency, 500 Hz, Pure Tones

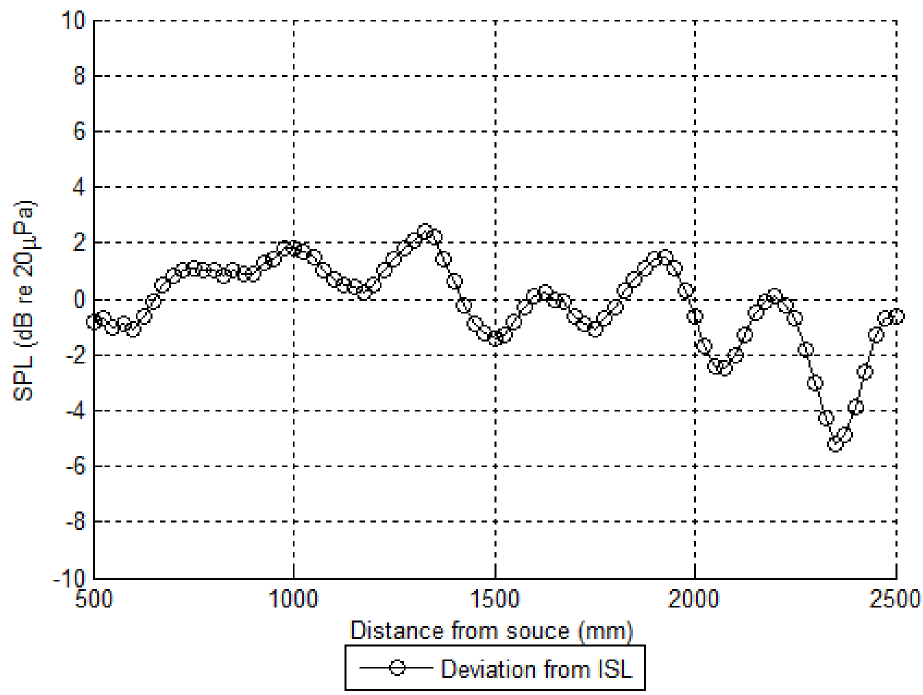

Figure A.51.—North Wall Upper Dihedral Traverse Mid Frequency, 630 Hz, Pure Tones

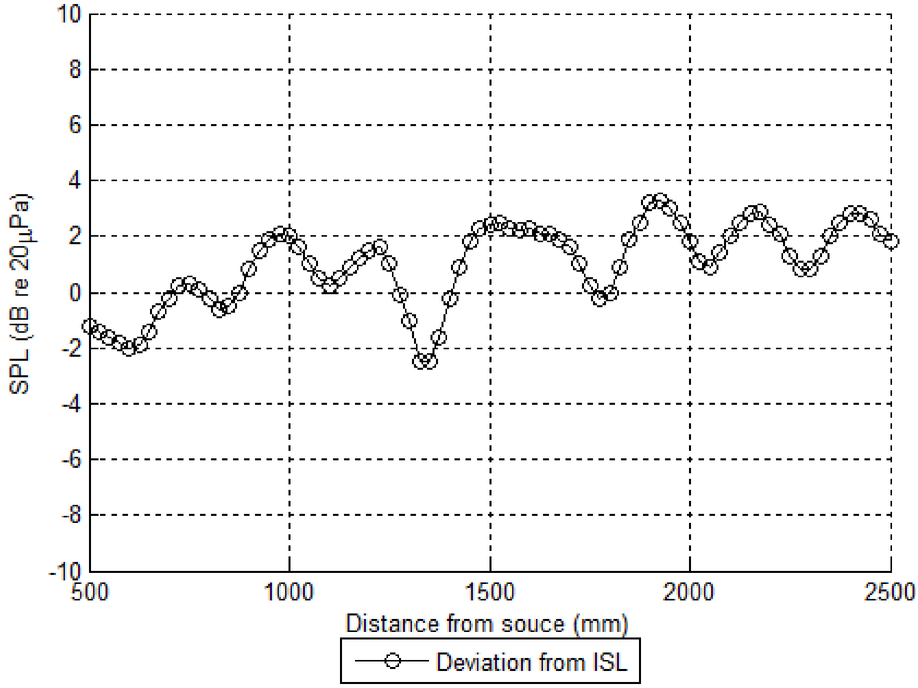

Figure A.52.—North Wall Upper Dihedral Traverse Mid Frequency, 800 Hz, Pure Tones

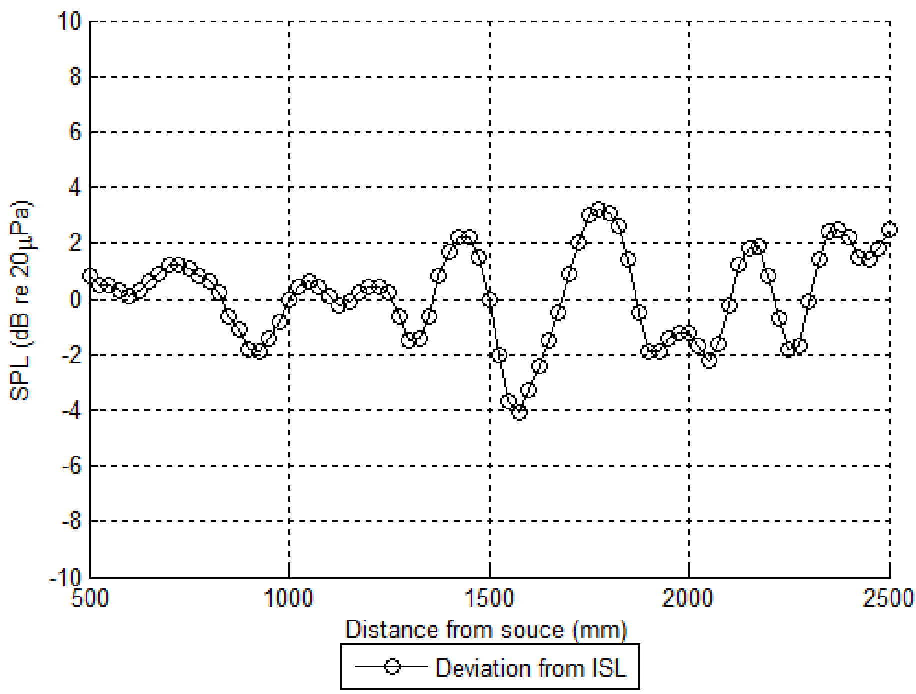

Figure A.53.—North Wall Upper Dihedral Traverse Mid Frequency, 1,000 Hz, Pure Tones

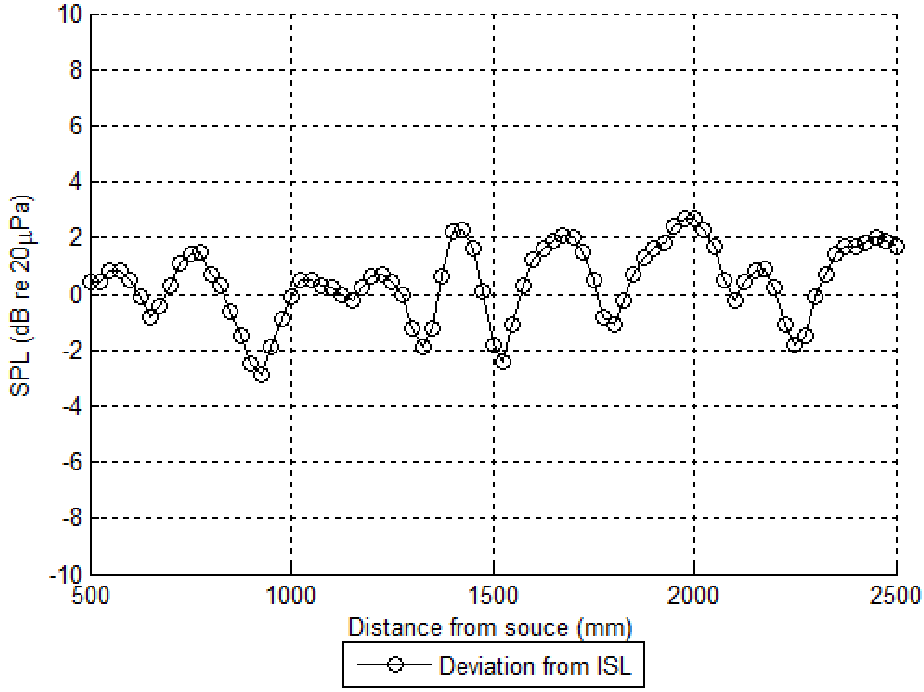

Figure A.54.—North Wall Upper Dihedral Traverse Mid Frequency, 1,250 Hz, Pure Tones

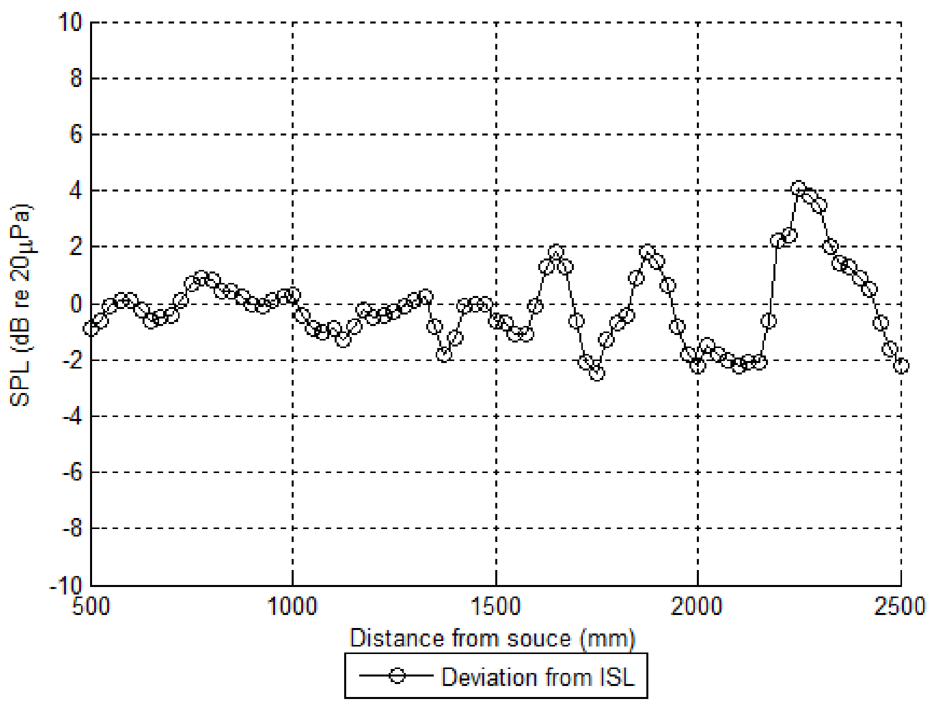

Figure A.55.—North Upper Dihedral Traverse High Frequency, 1,600 Hz, Pure Tones

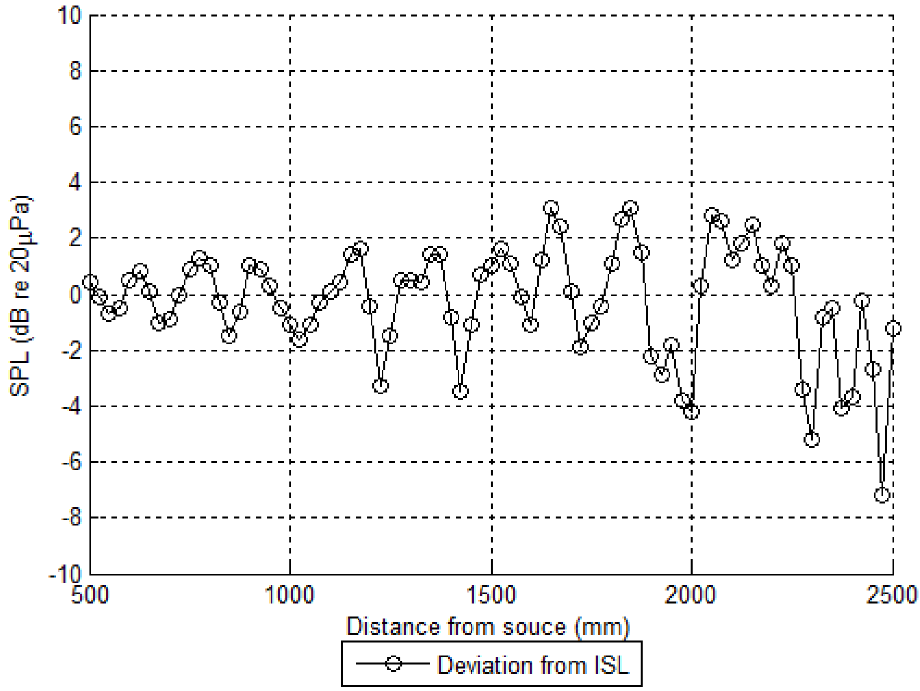

Figure A.56.—North Upper Dihedral Traverse High Frequency, 2,000 Hz, Pure Tones

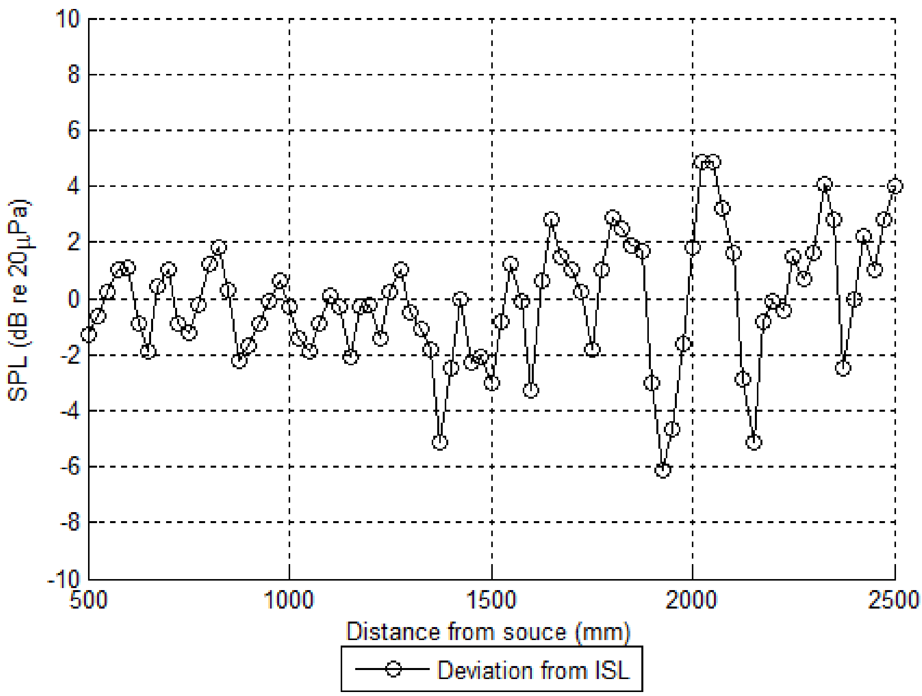

Figure A.57.—North Upper Dihedral Traverse High Frequency, 2,500 Hz, Pure Tones

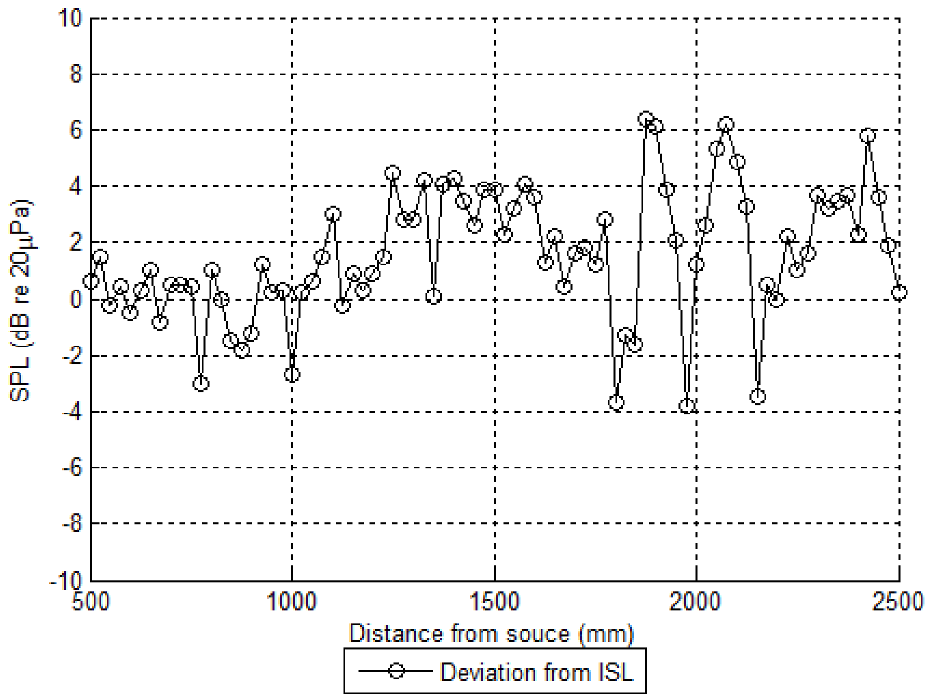

Figure A.58.—North Upper Dihedral Traverse High Frequency, 3,150 Hz, Pure Tones

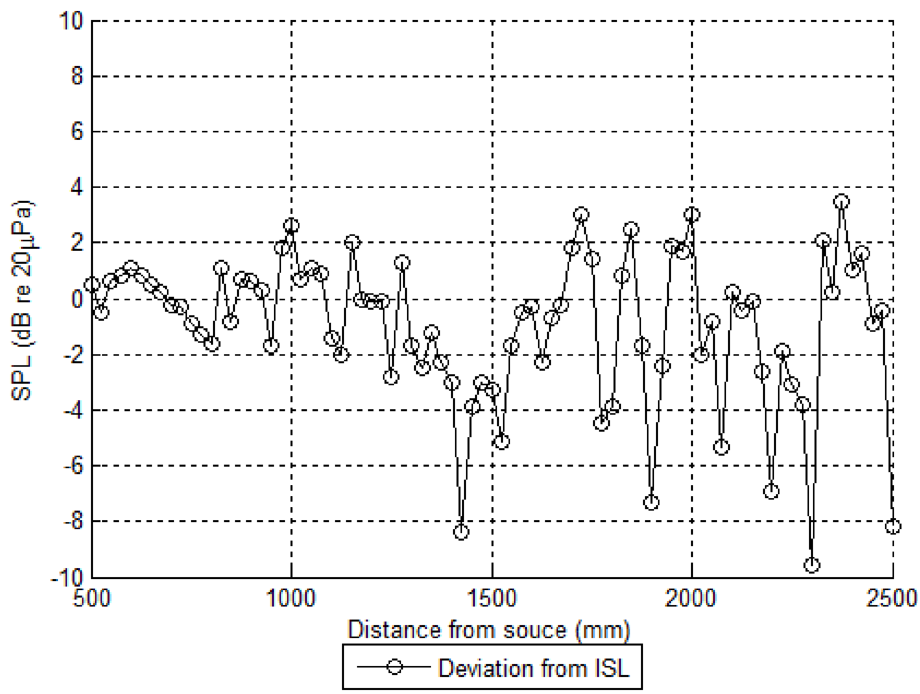

Figure A.59.—North Upper Dihedral Traverse High Frequency, 4,000 Hz, Pure Tones

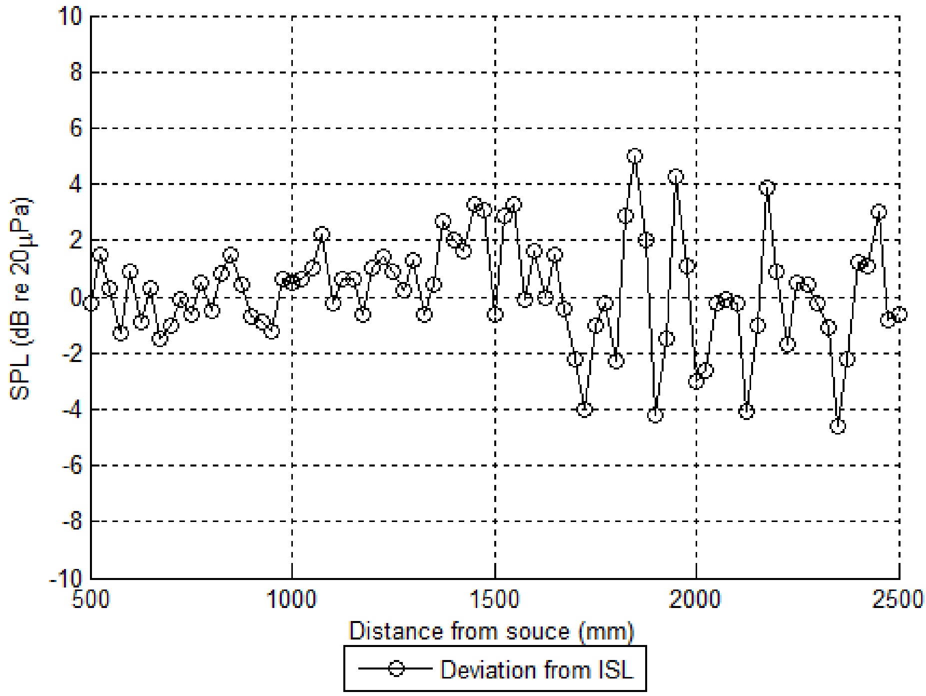

Figure A.60.—North Upper Dihedral Traverse High Frequency, 5,000 Hz, Pure Tones

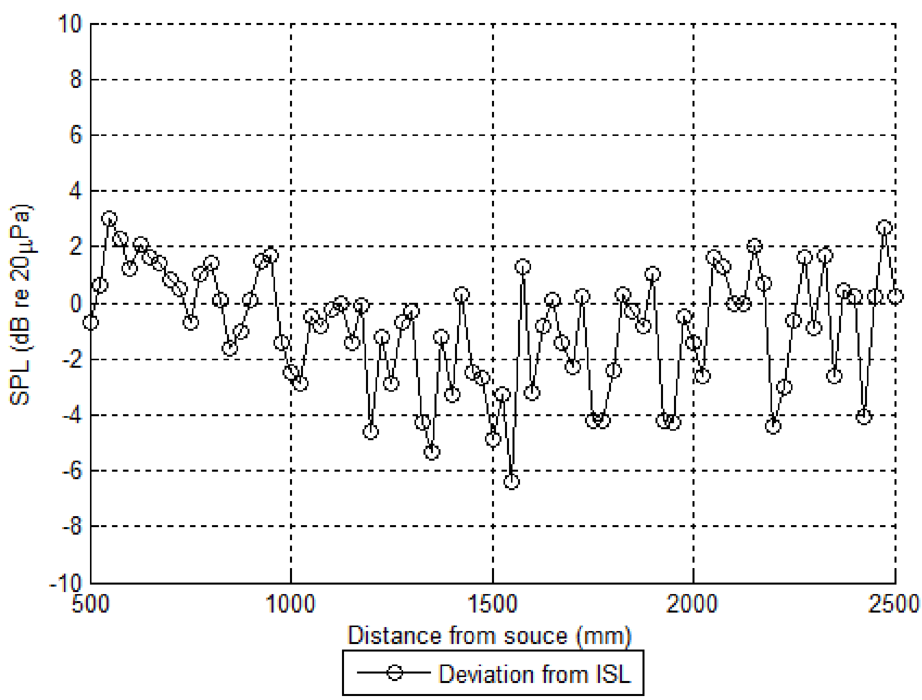

Figure A.61.—North Upper Dihedral Traverse High Frequency, 6,300 Hz, Pure Tones

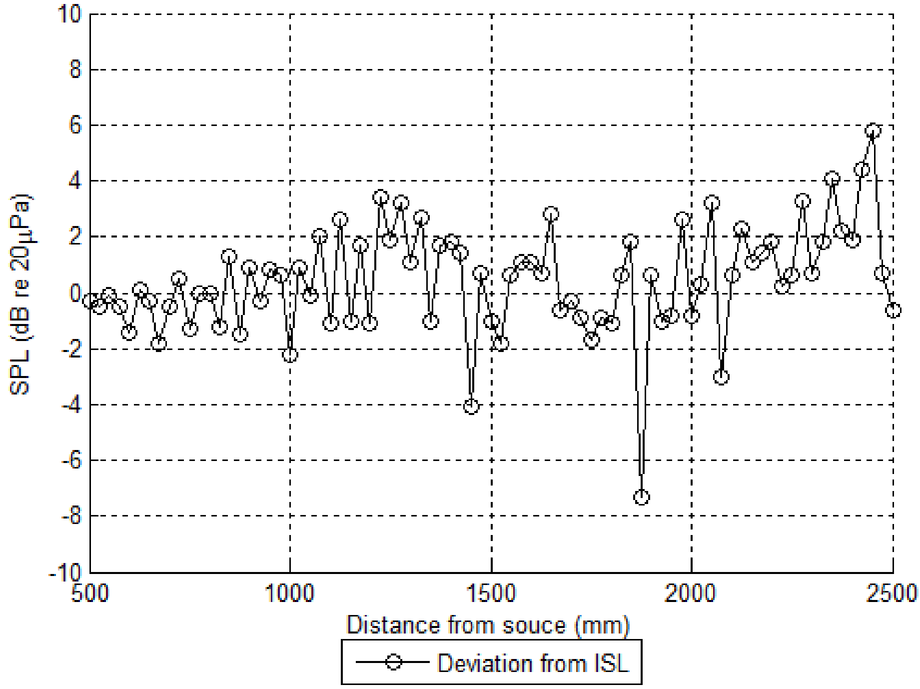

Figure A.62.—North Upper Dihedral Traverse High Frequency, 6,300 Hz, Pure Tones

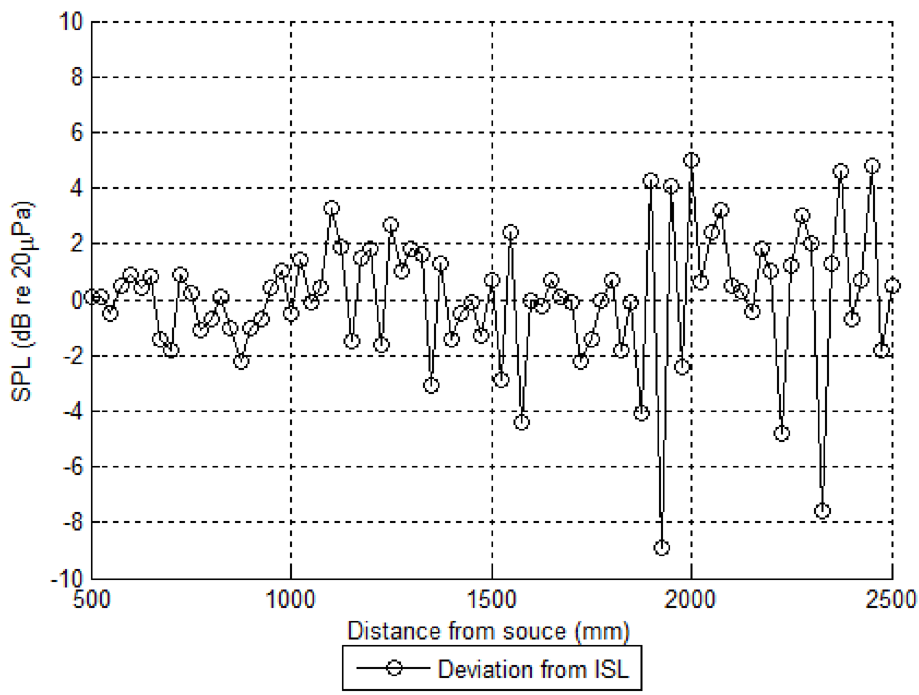

Figure A.63.—North Upper Dihedral Traverse High Frequency, 10,000 Hz, Pure Tones

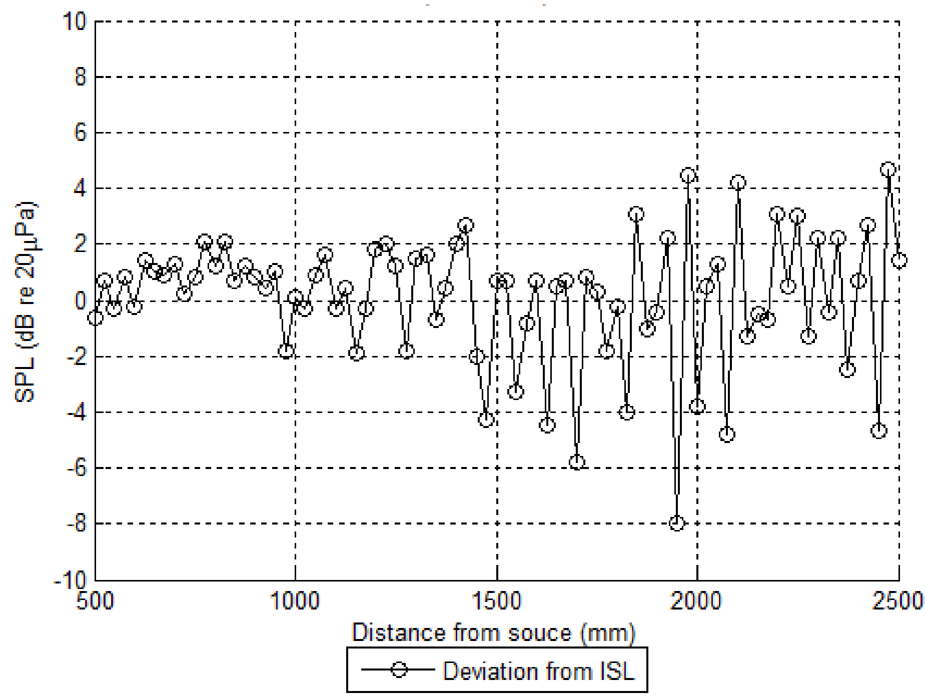

Figure A.64.—North Upper Dihedral Traverse High Frequency, 12,500 Hz, Pure Tones

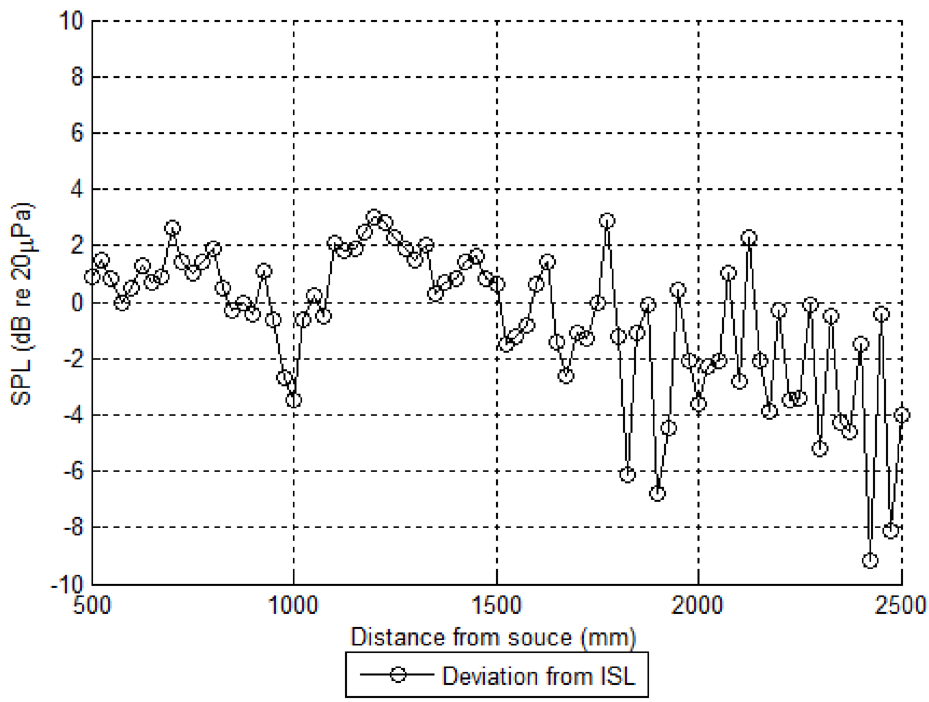

Figure A.65.—North Upper Dihedral Traverse High Frequency, 16,000 Hz, Pure Tones

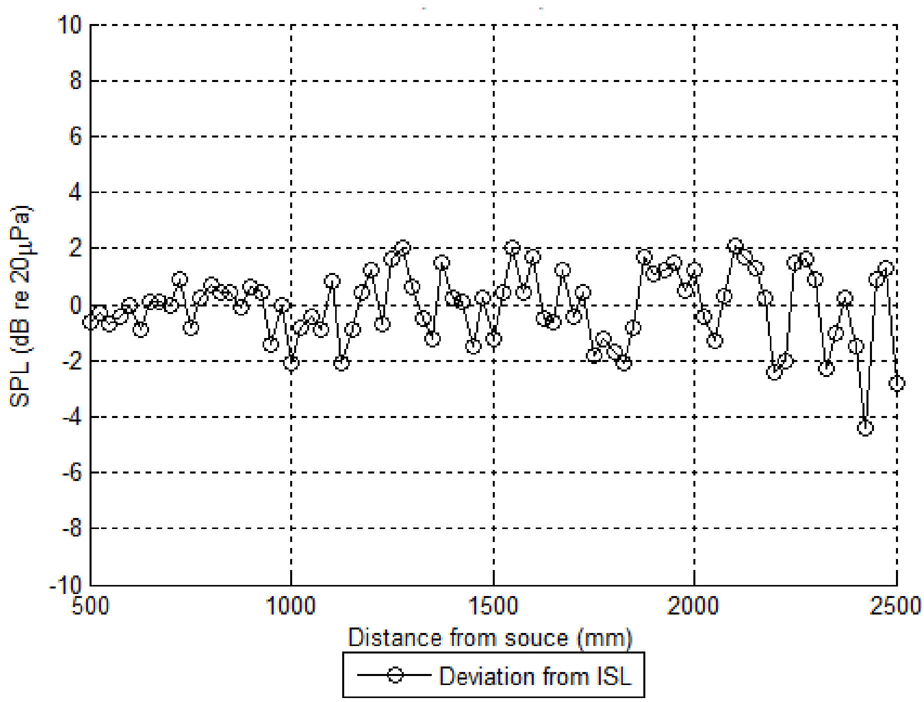

Figure A.66.—North Upper Dihedral Traverse High Frequency, 20,000 Hz, Pure Tones

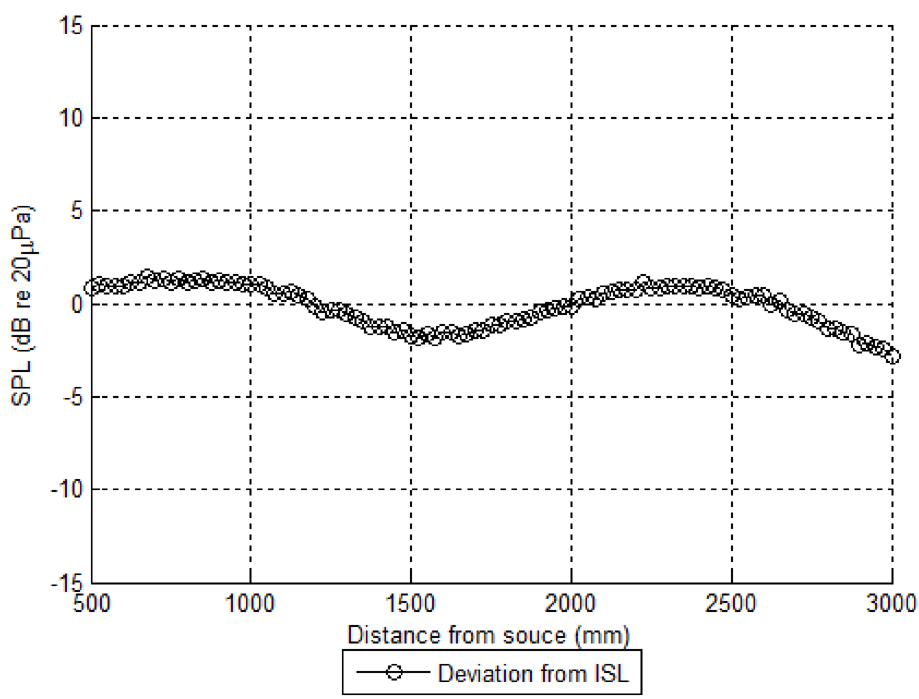

Figure A.67.—Northeast Upper Trihedral Traverse Mid Frequency, 160 Hz, Pure Tones

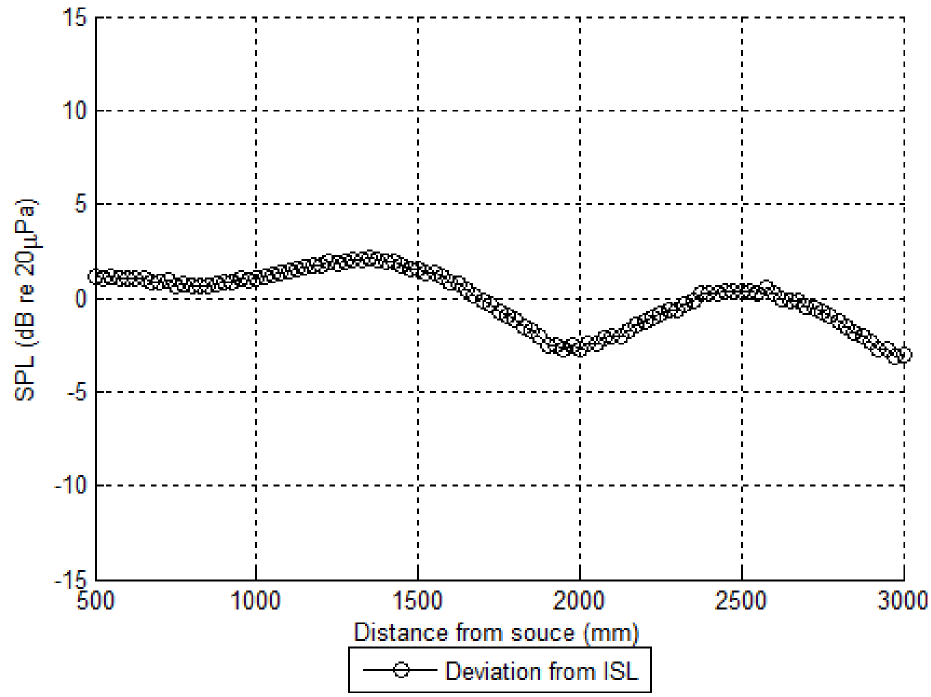

Figure A.68.—Northeast Upper Trihedral Traverse Mid Frequency, 200 Hz, Pure Tones

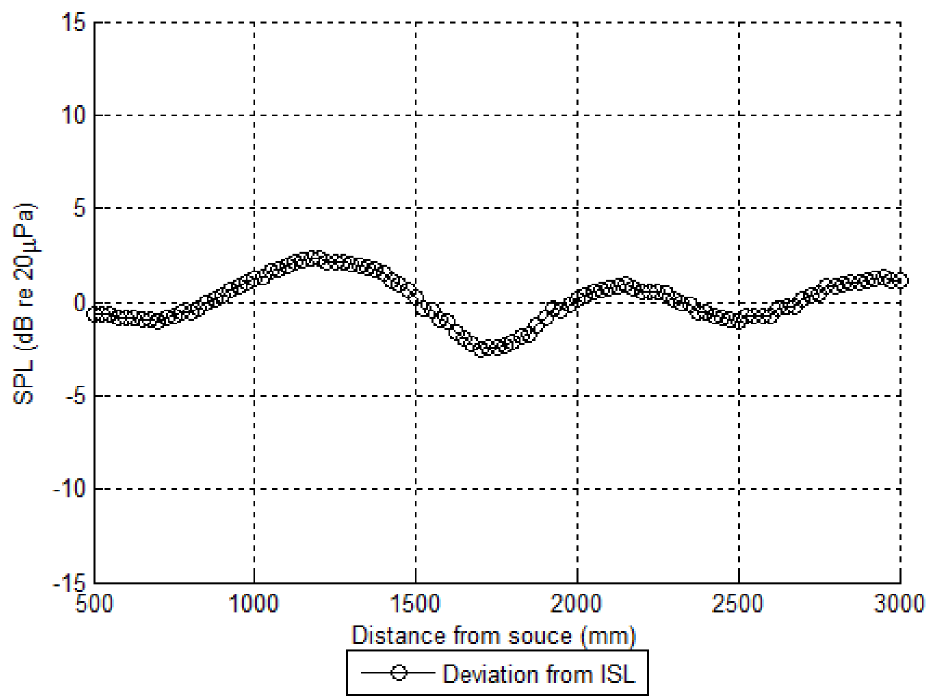

Figure A.69.—Northeast Upper Trihedral Traverse Mid Frequency, 250 Hz, Pure Tones

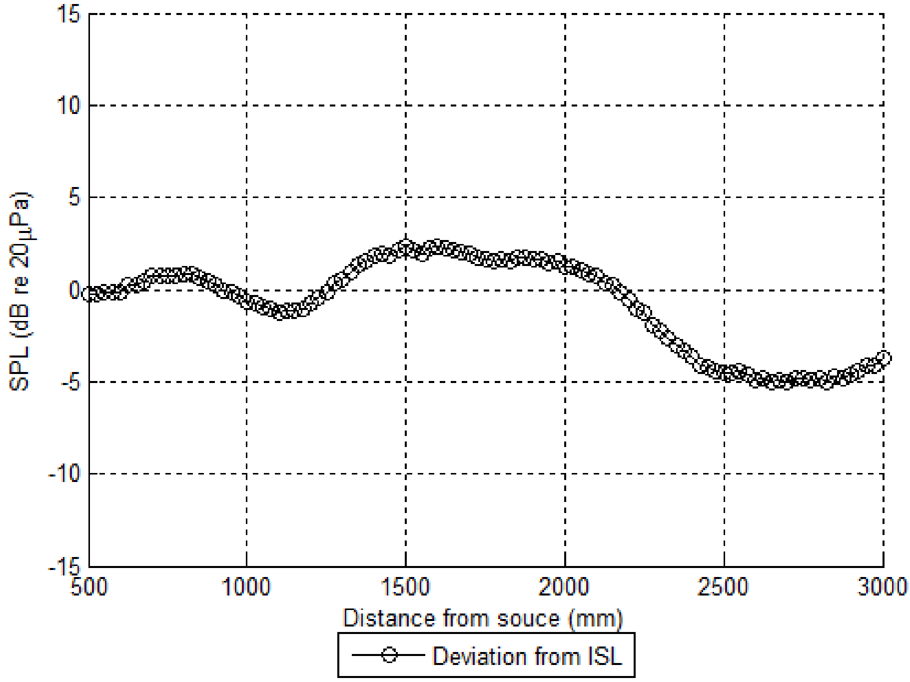

Figure A.70.—Northeast Upper Trihedral Traverse Mid Frequency, 315 Hz, Pure Tones

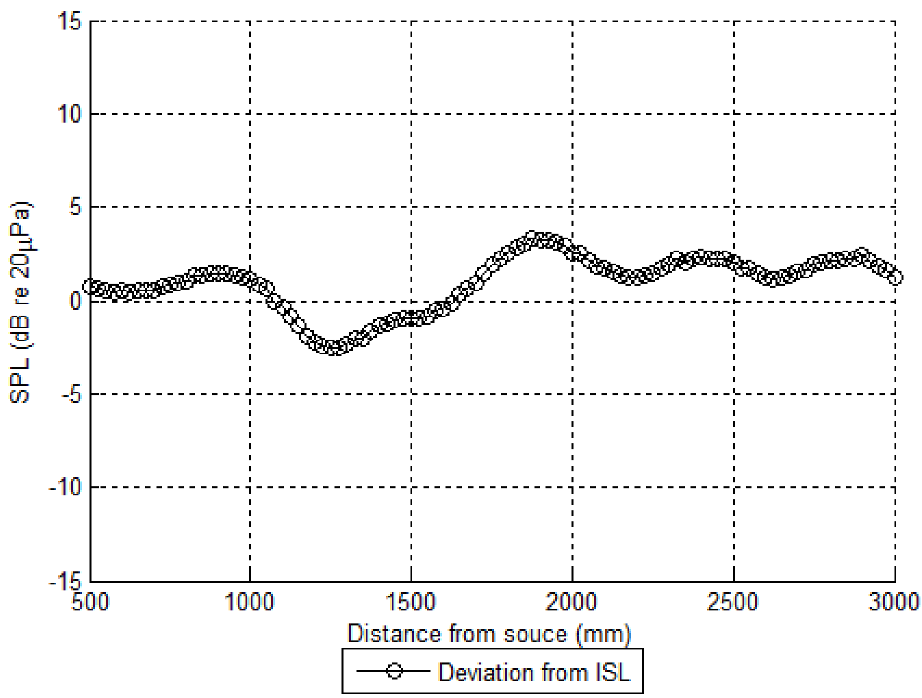

Figure A.71.—Northeast Upper Trihedral Traverse Mid Frequency, 400 Hz, Pure Tones

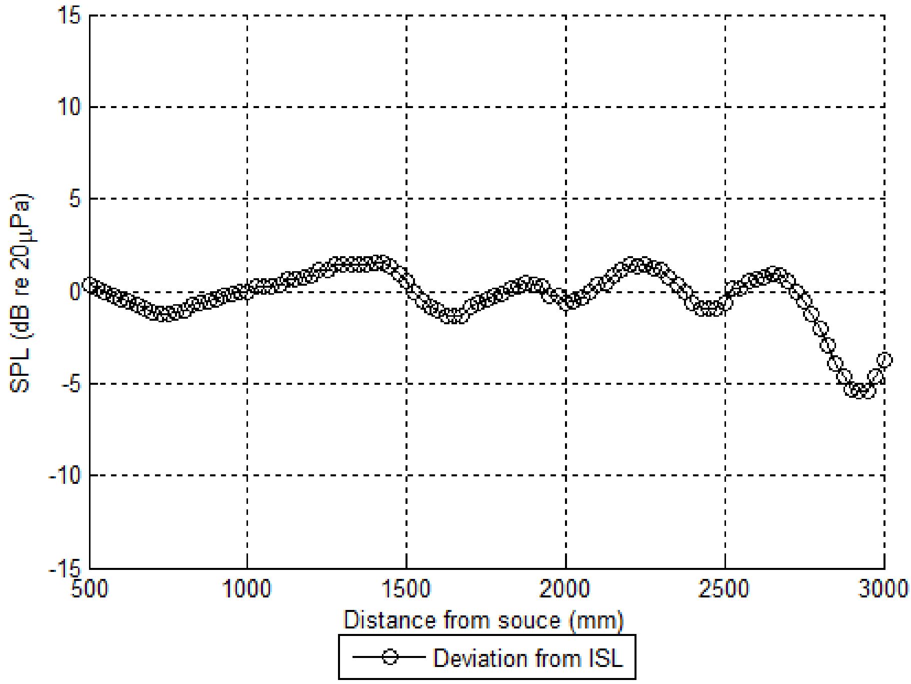

Figure A.72.—Northeast Upper Trihedral Traverse Mid Frequency, 500 Hz, Pure Tones

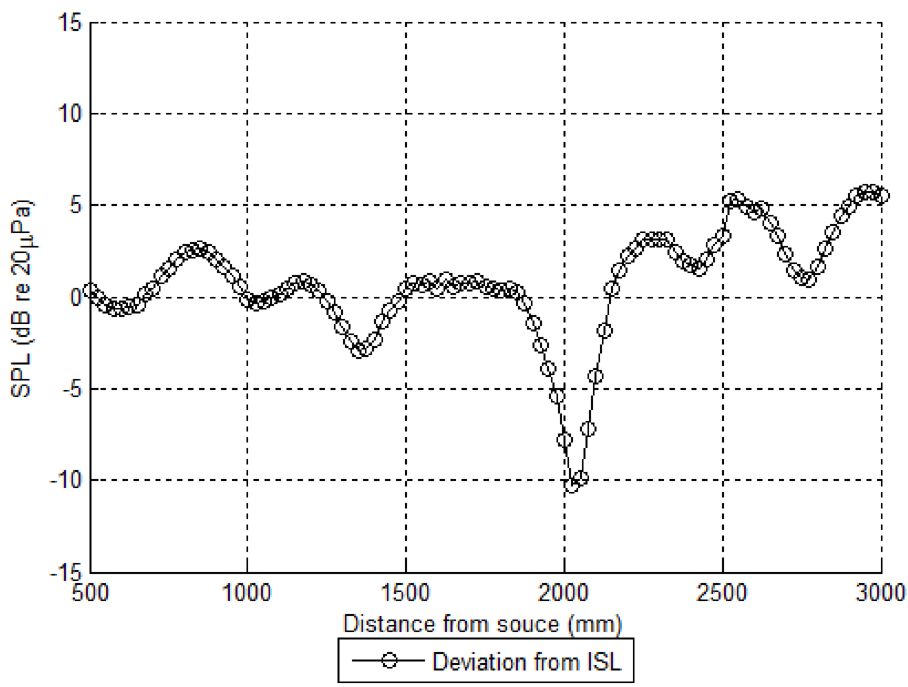

Figure A.73.—Northeast Upper Trihedral Traverse Mid Frequency, 630 Hz, Pure Tones

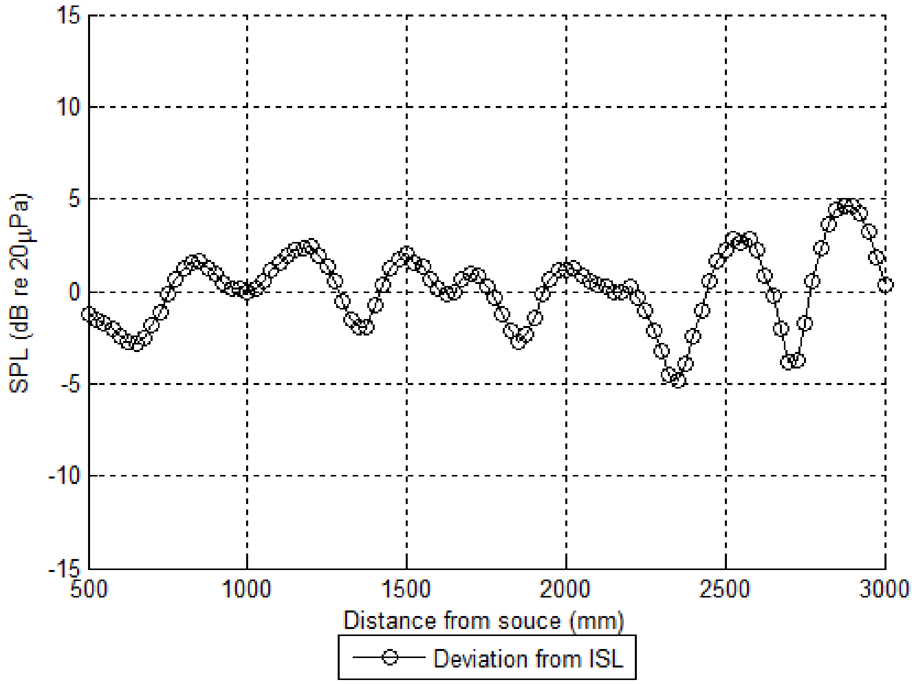

Figure A.74.—Northeast Upper Trihedral Traverse Mid Frequency, 800 Hz, Pure Tones

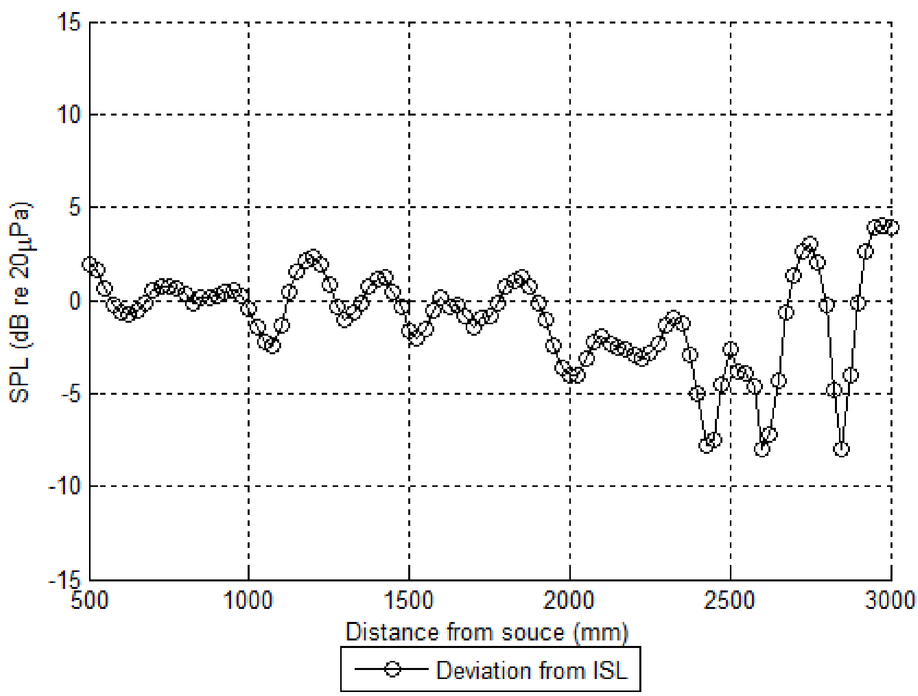

Figure A.75.—Northeast Upper Trihedral Traverse Mid Frequency, 1,000 Hz, Pure Tones

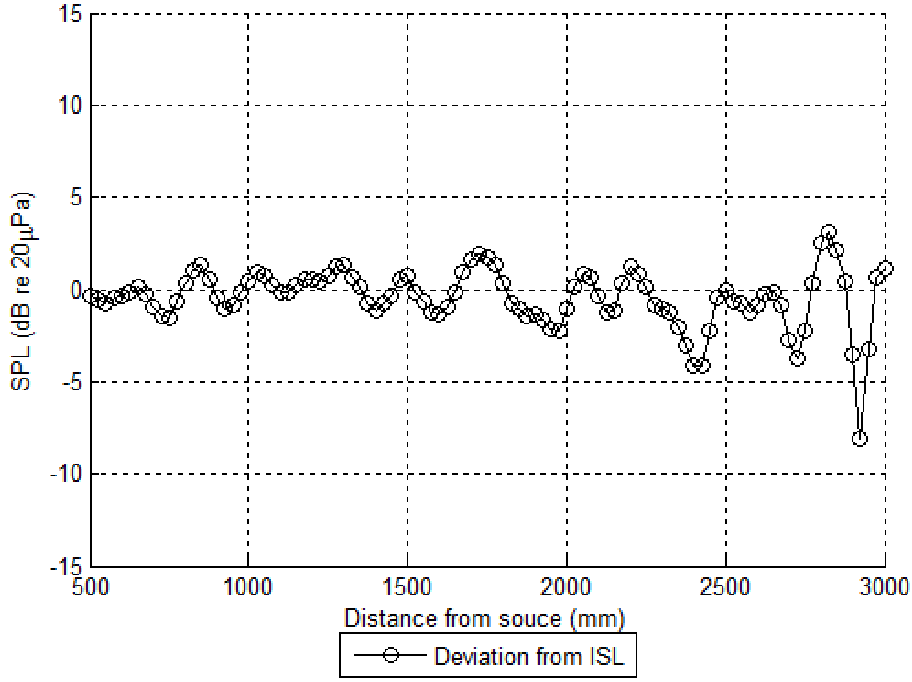

Figure A.76.—Northeast Upper Trihedral Traverse Mid Frequency, 1,250 Hz, Pure Tones

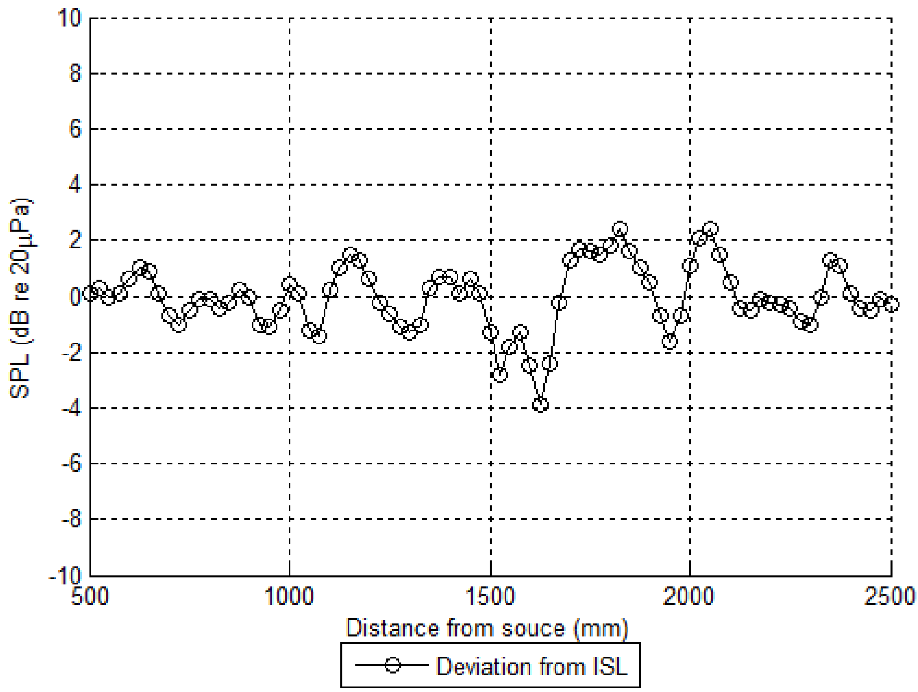

Figure A.77.—Northeast Upper Trihedral Traverse High Frequency, 1,600 Hz, Pure Tones

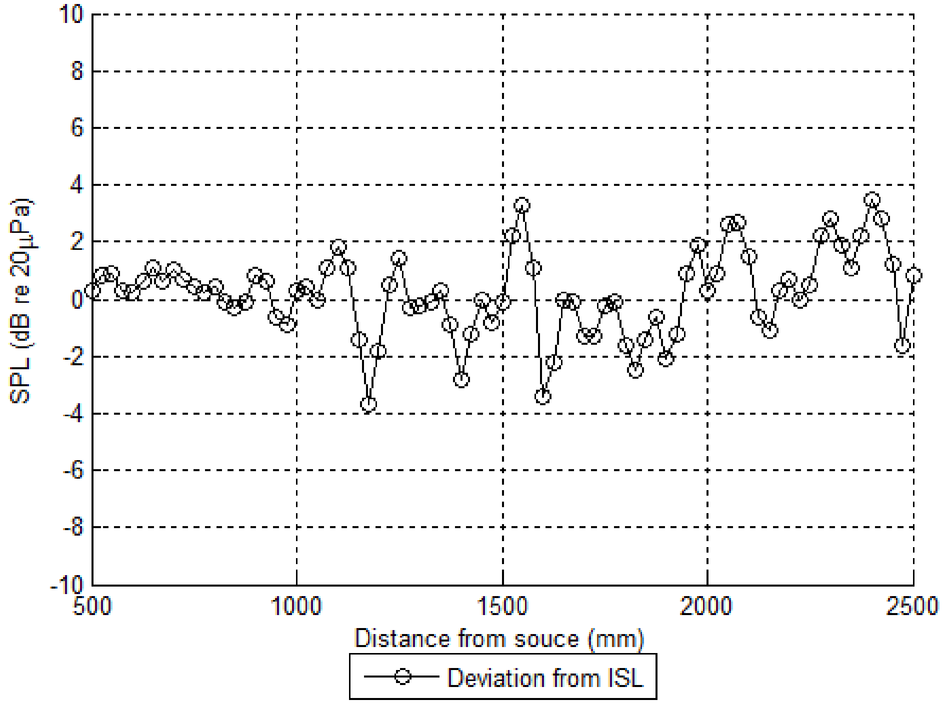

Figure A.78.—Northeast Upper Trihedral Traverse High Frequency, 2,000 Hz, Pure Tones

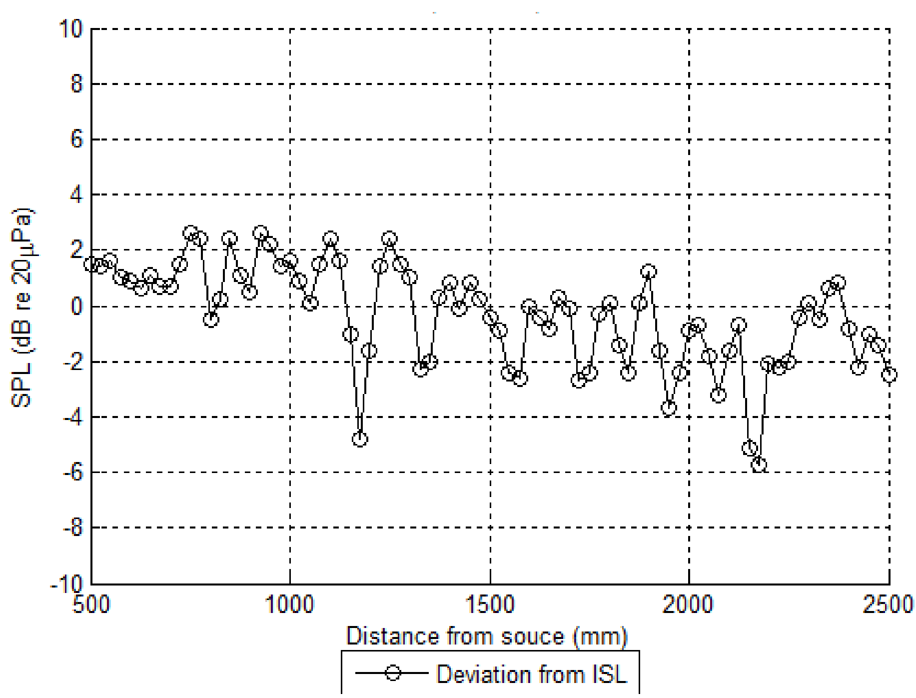

Figure A.79.—Northeast Upper Trihedral Traverse High Frequency, 2,500 Hz, Pure Tones

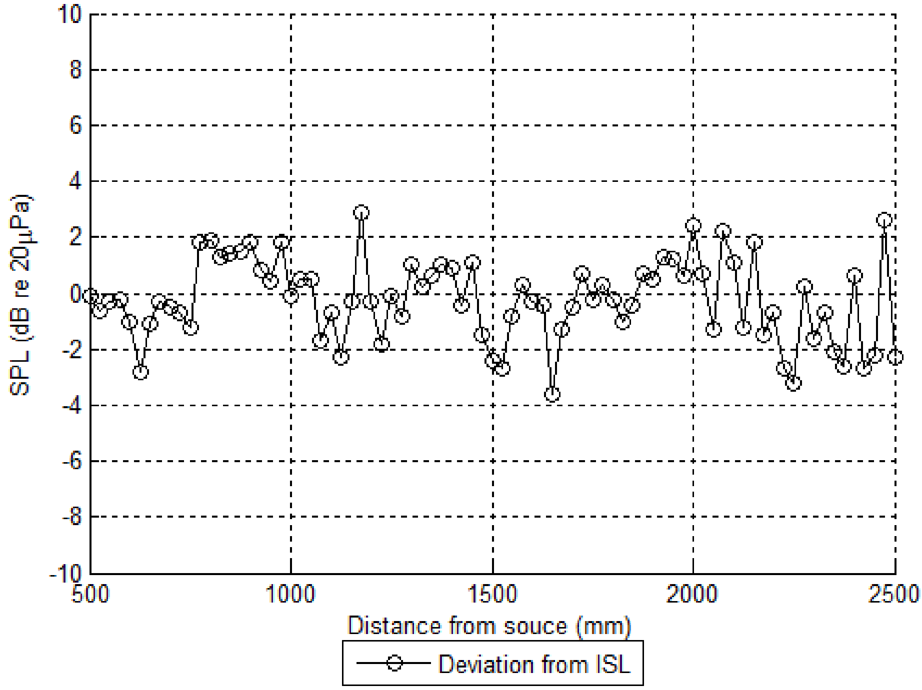

Figure A.80.—Northeast Upper Trihedral Traverse High Frequency, 3,150 Hz, Pure Tones

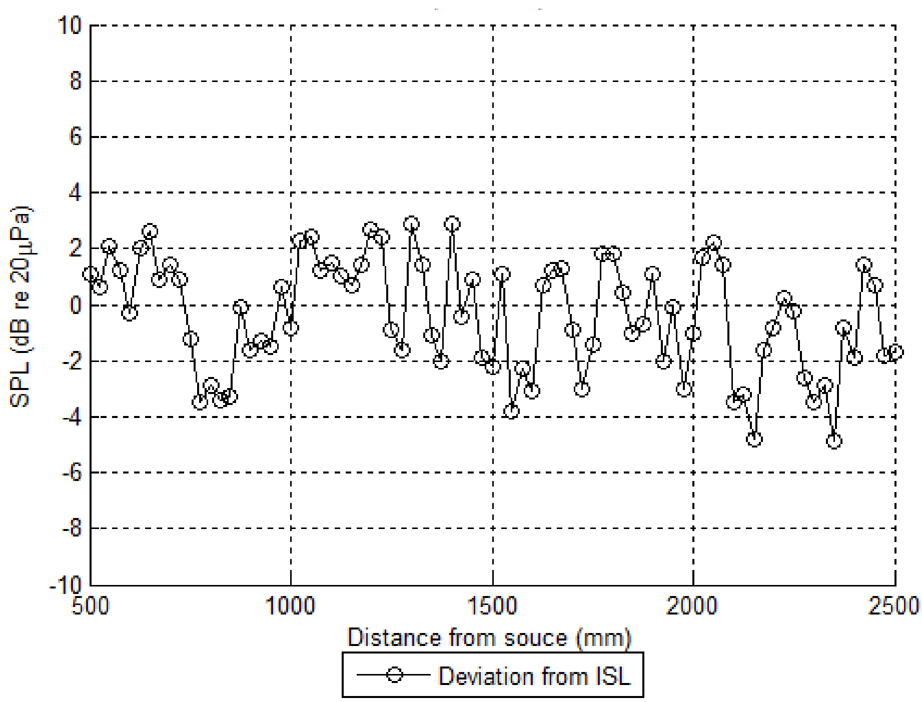

Figure A.81.—Northeast Upper Trihedral Traverse High Frequency, 4,000 Hz, Pure Tones

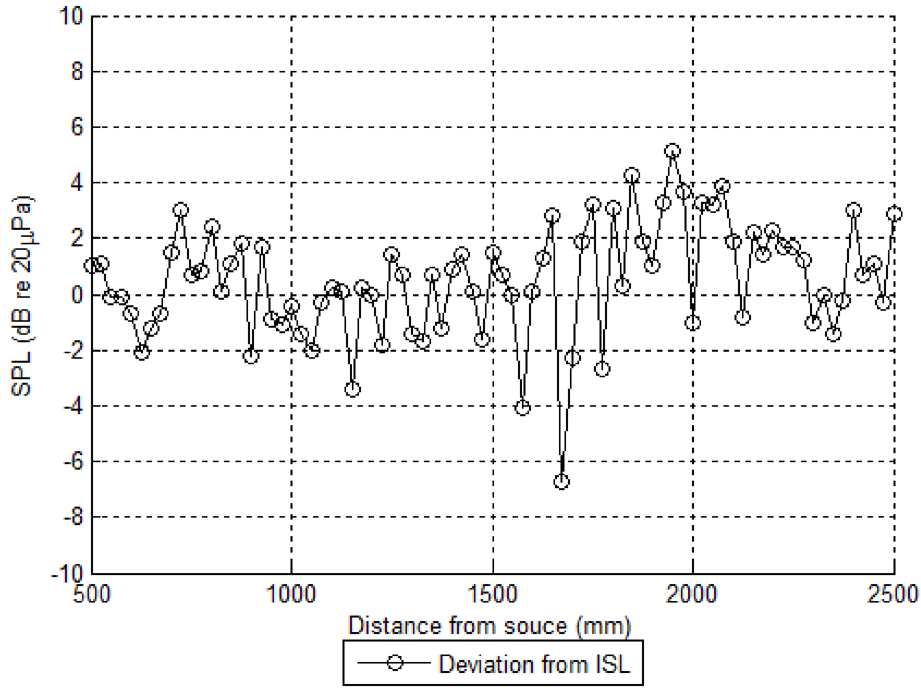

Figure A.82.—Northeast Upper Trihedral Traverse High Frequency, 5,000 Hz, Pure Tones

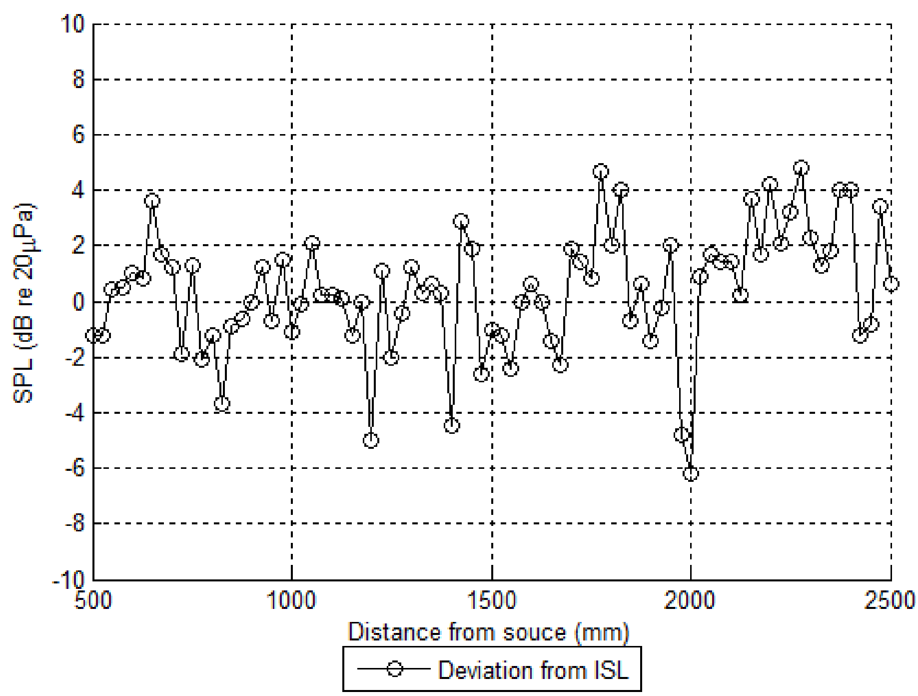

Figure A.83.—Northeast Upper Trihedral Traverse High Frequency, 6,300 Hz, Pure Tones

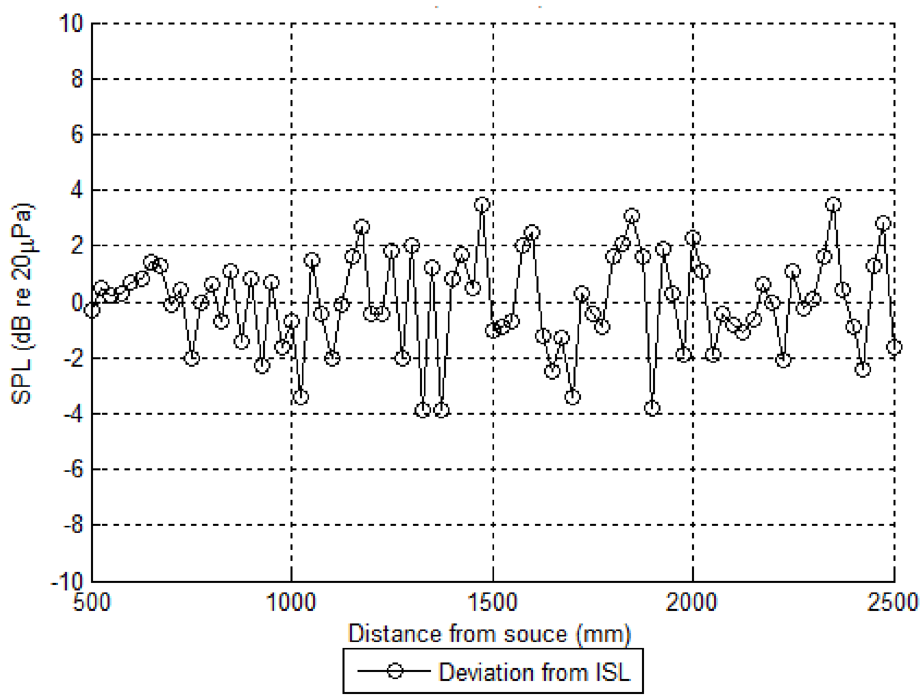

Figure A.84.—Northeast Upper Trihedral Traverse High Frequency, 8,000 Hz, Pure Tones

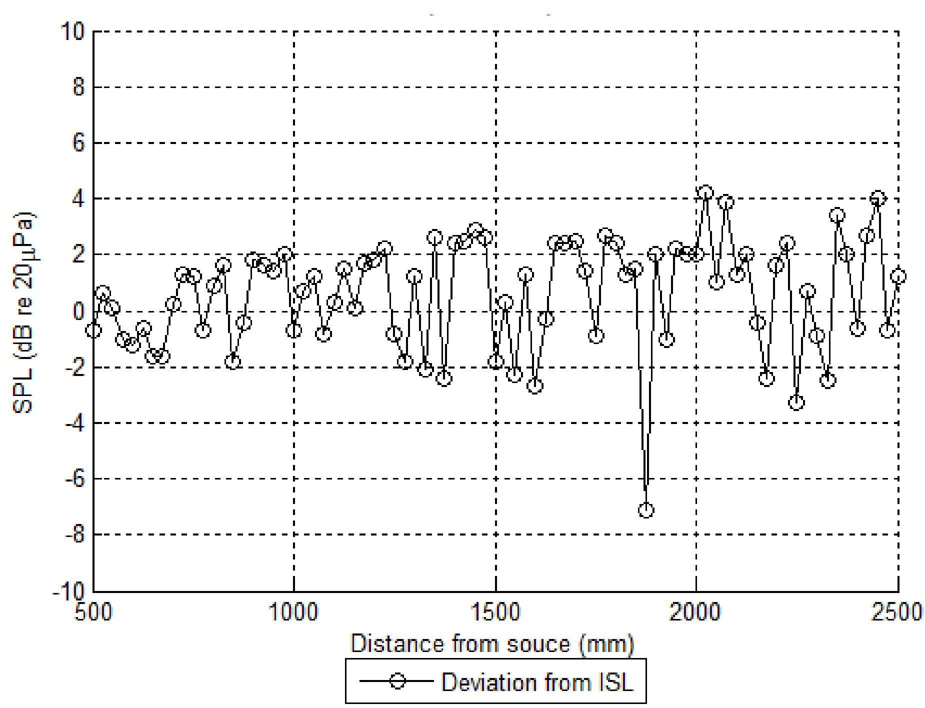

Figure A.85.—Northeast Upper Trihedral Traverse High Frequency, 10,000 Hz, Pure Tones

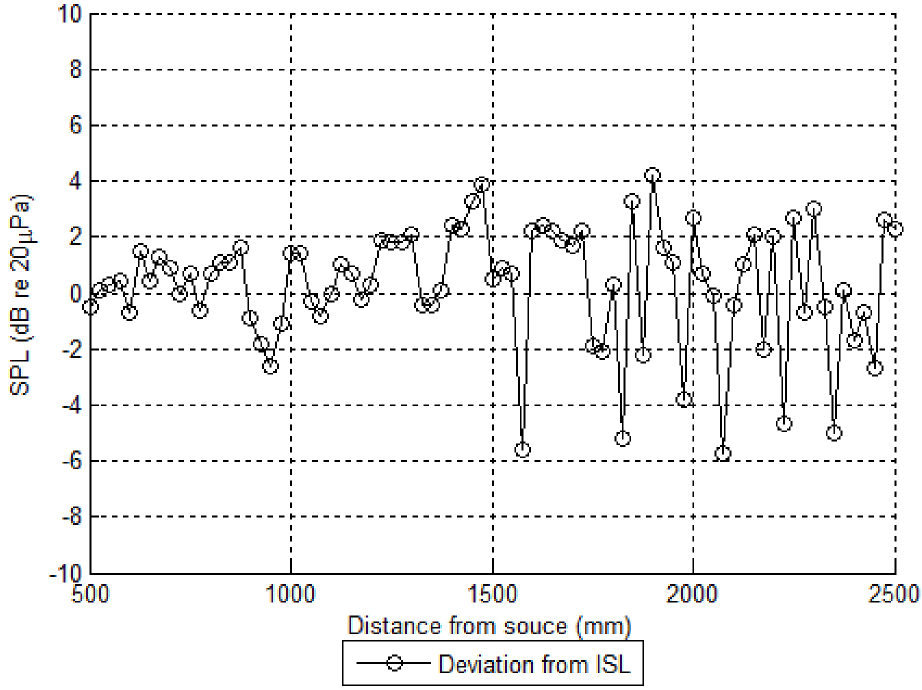

Figure A.86.—Northeast Upper Trihedral Traverse High Frequency, 12,500 Hz, Pure Tones

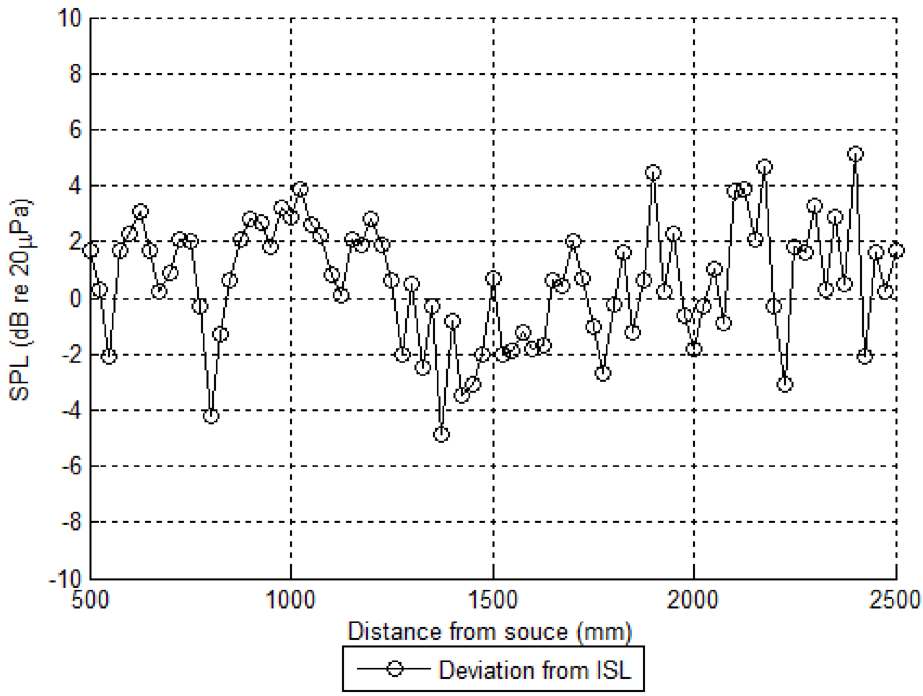

Figure A.87.—Northeast Upper Trihedral Traverse High Frequency, 16,000 Hz, Pure Tones

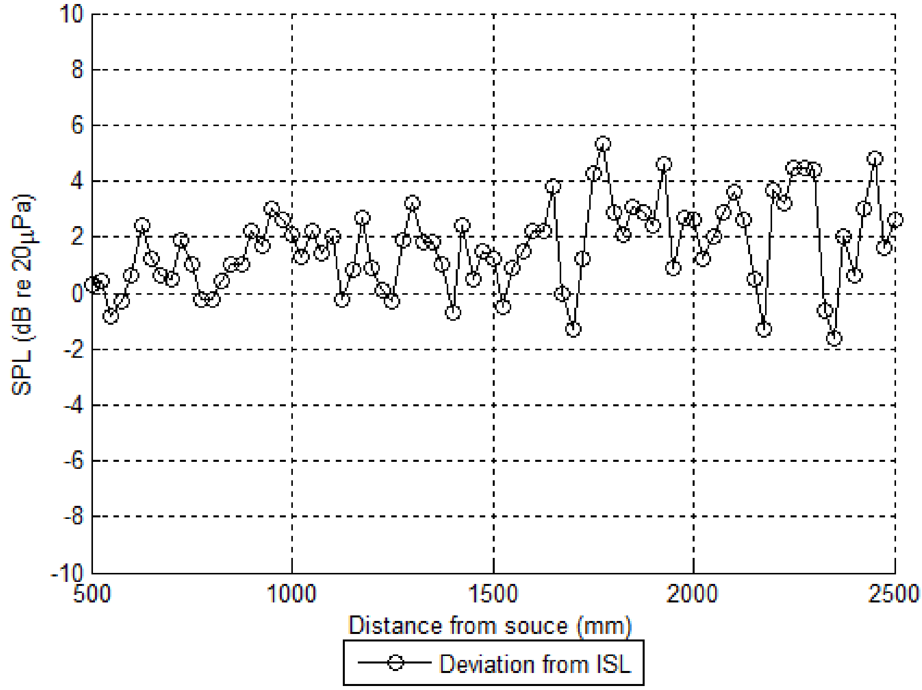

Figure A.88.—Northeast Upper Trihedral Traverse High Frequency, 20,000 Hz, Pure Tones

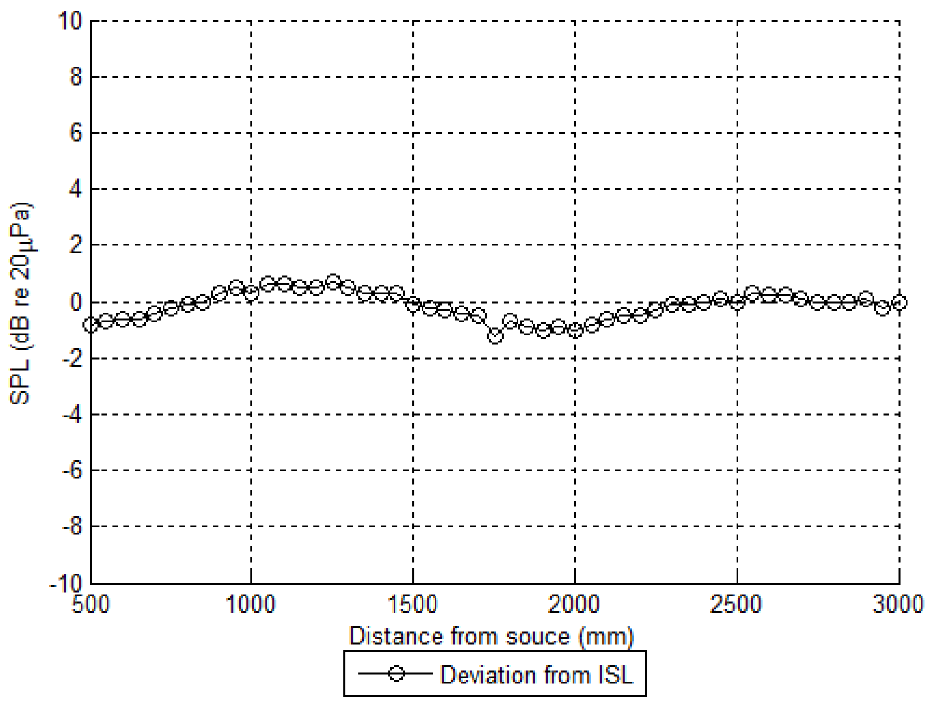

Figure A.89.—Northwest Upper Trihedral Traverse Mid Frequency, 160 Hz, Pure Tones

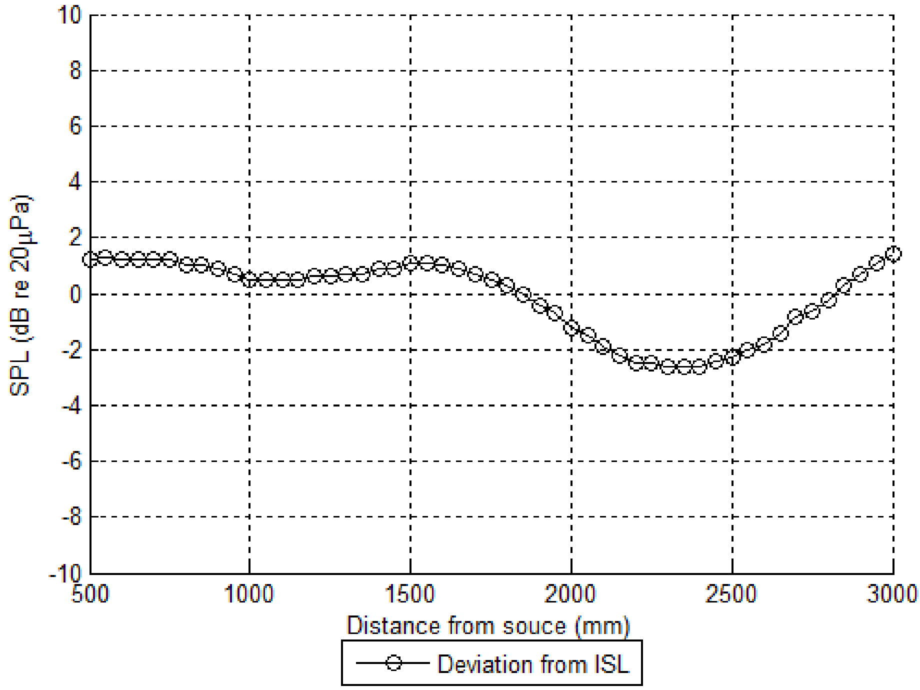

Figure A.90.—Northwest Upper Trihedral Traverse Mid Frequency, 200 Hz, Pure Tones

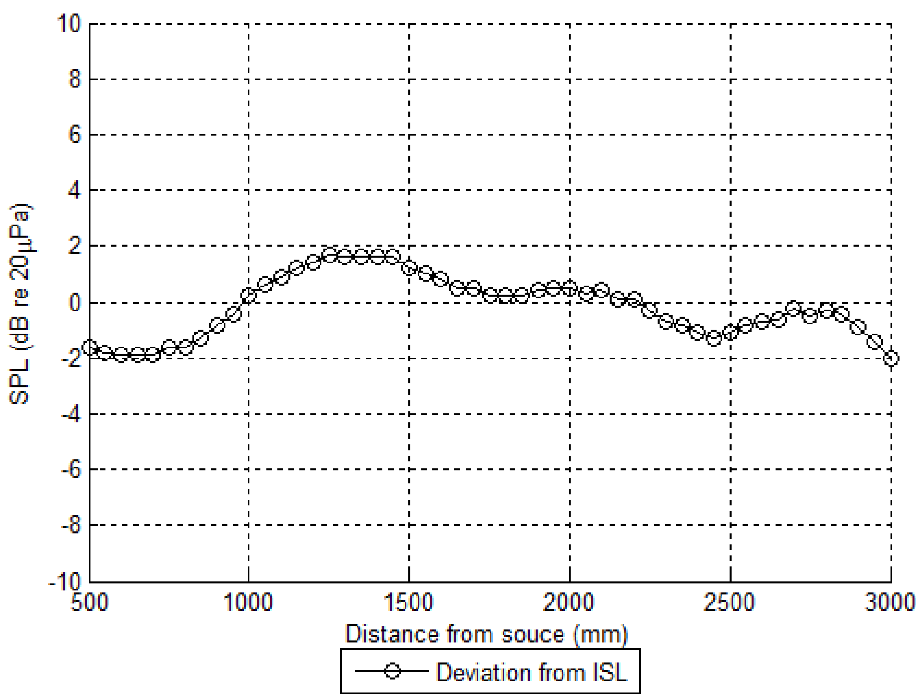

Figure A.91.—Northwest Upper Trihedral Traverse Mid Frequency, 250 Hz, Pure Tones

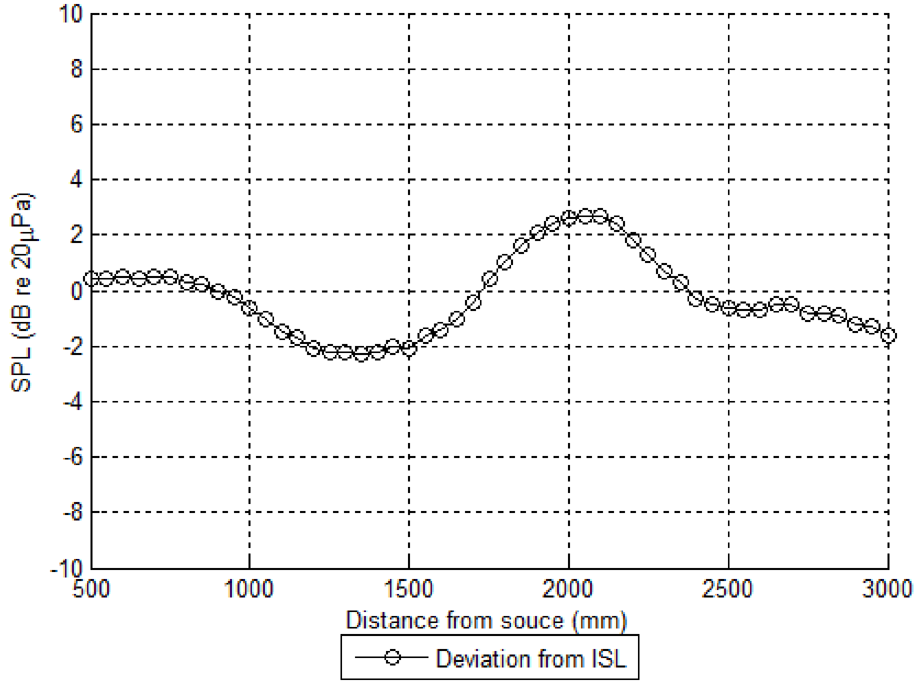

Figure A.92.—Northwest Upper Trihedral Traverse Mid Frequency, 315 Hz, Pure Tones

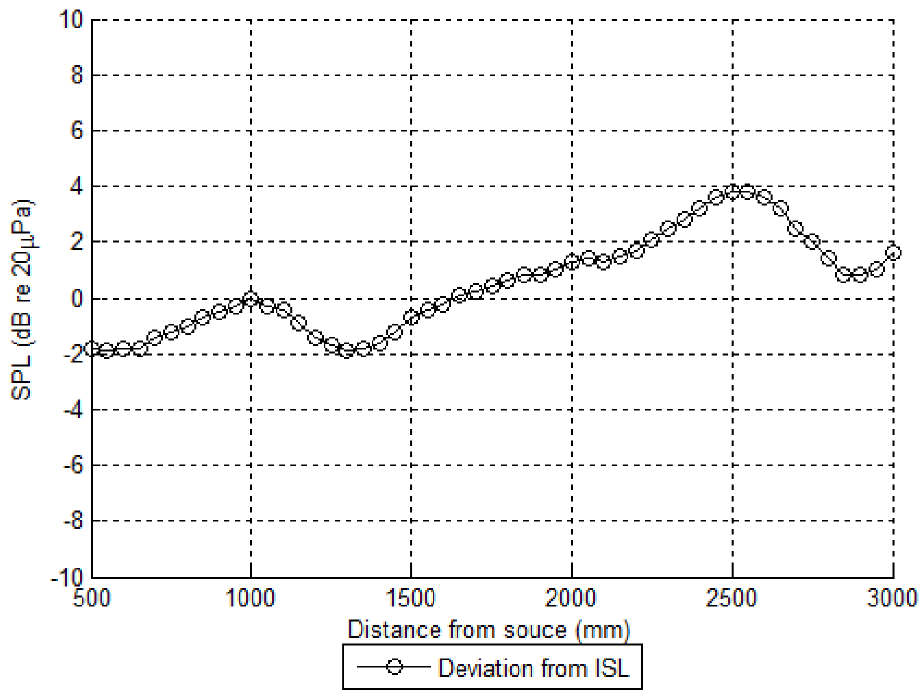

Figure A.93.—Northwest Upper Trihedral Traverse Mid Frequency, 400 Hz, Pure Tones

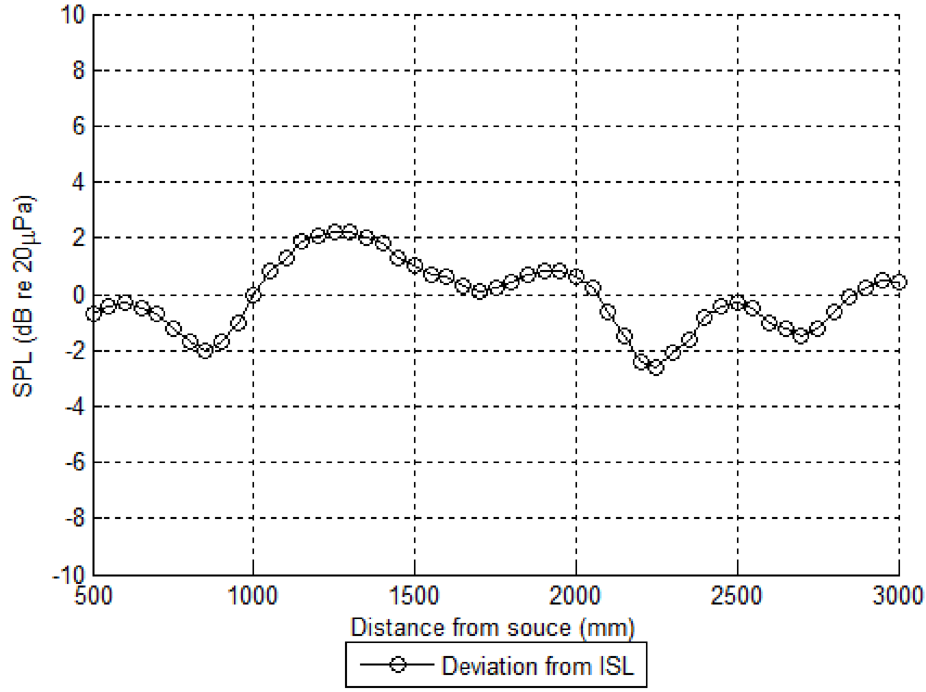

Figure A.94.—Northwest Upper Trihedral Traverse Mid Frequency, 500 Hz, Pure Tones

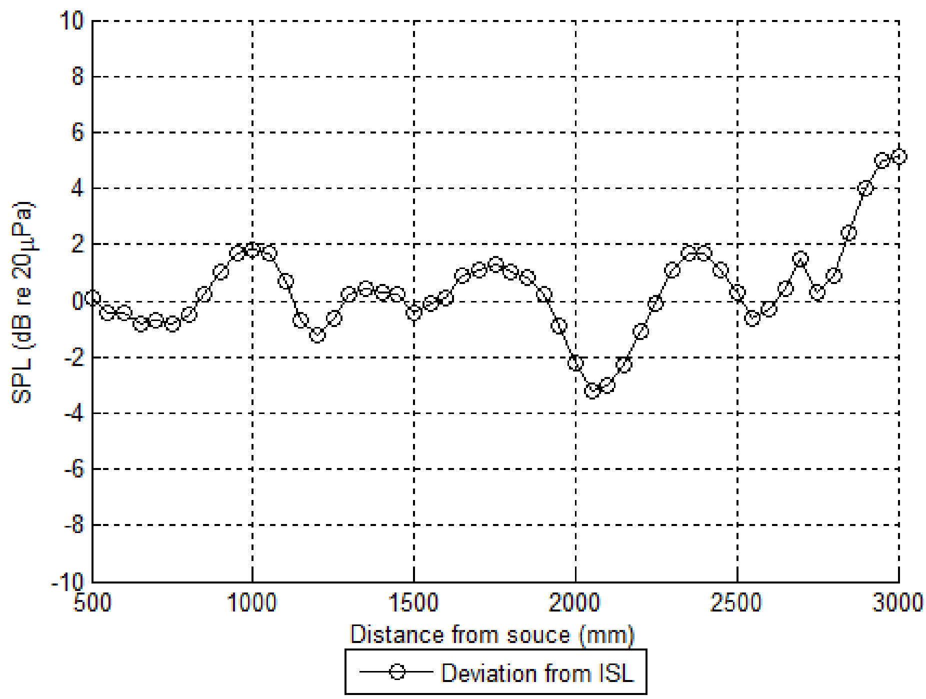

Figure A.95.—Northwest Upper Trihedral Traverse Mid Frequency, 630 Hz, Pure Tones

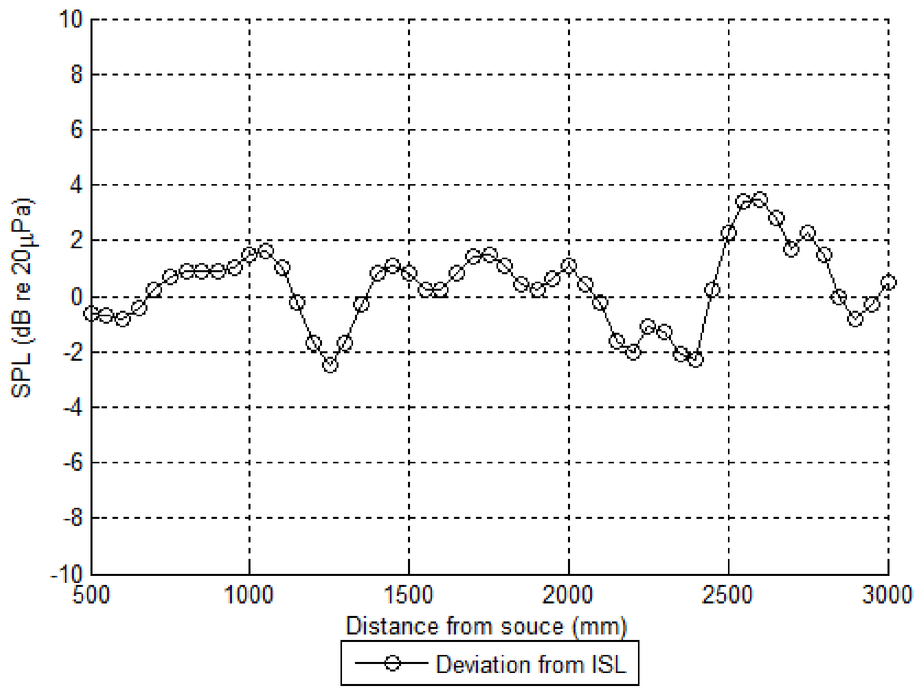

Figure A.96.—Northwest Upper Trihedral Traverse Mid Frequency, 800 Hz, Pure Tones

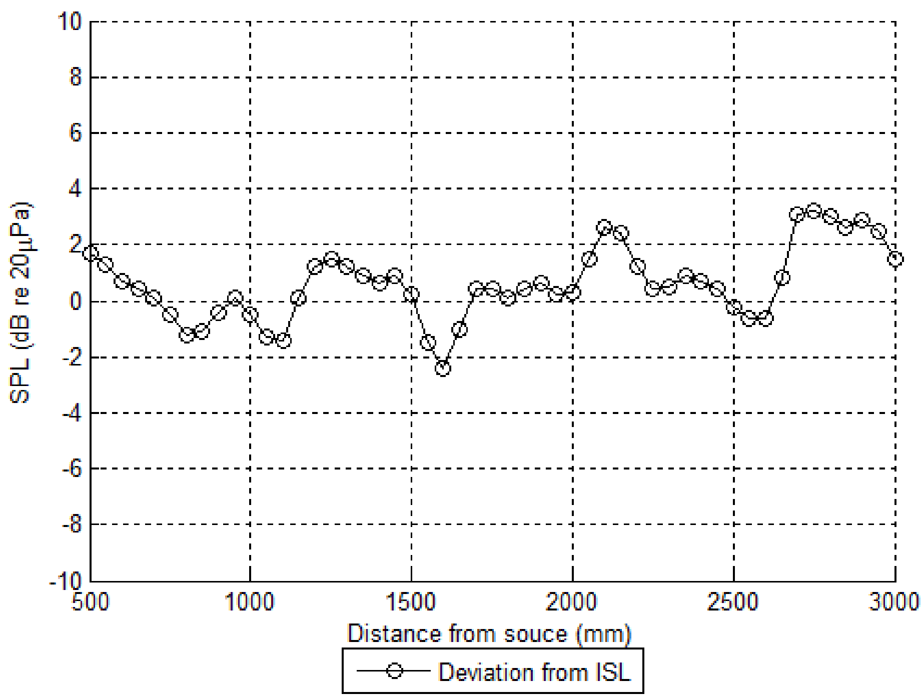

Figure A.97.—Northwest Upper Trihedral Traverse Mid Frequency, 1,000 Hz, Pure Tones

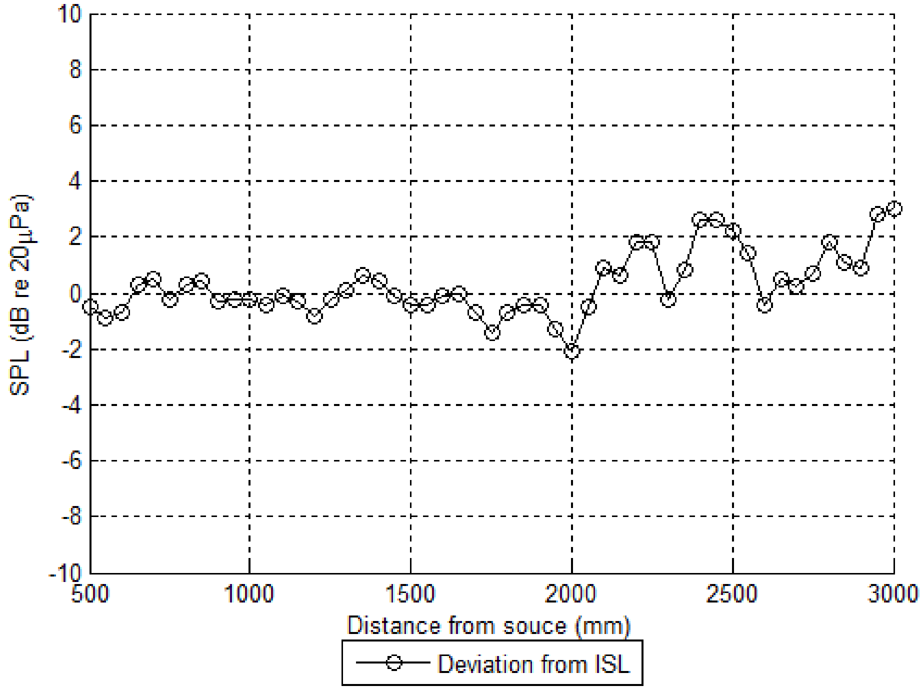

Figure A.98.—Northwest Upper Trihedral Traverse Mid Frequency, 1,250 Hz, Pure Tones

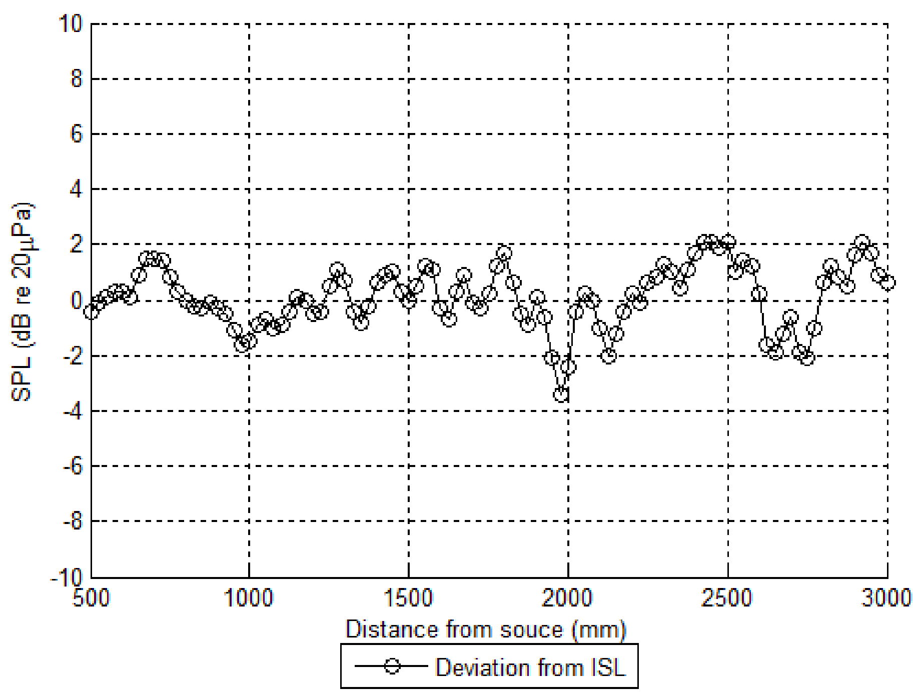

Figure A.99.—Northwest Upper Trihedral Traverse High Frequency, 1,600 Hz, Pure Tones

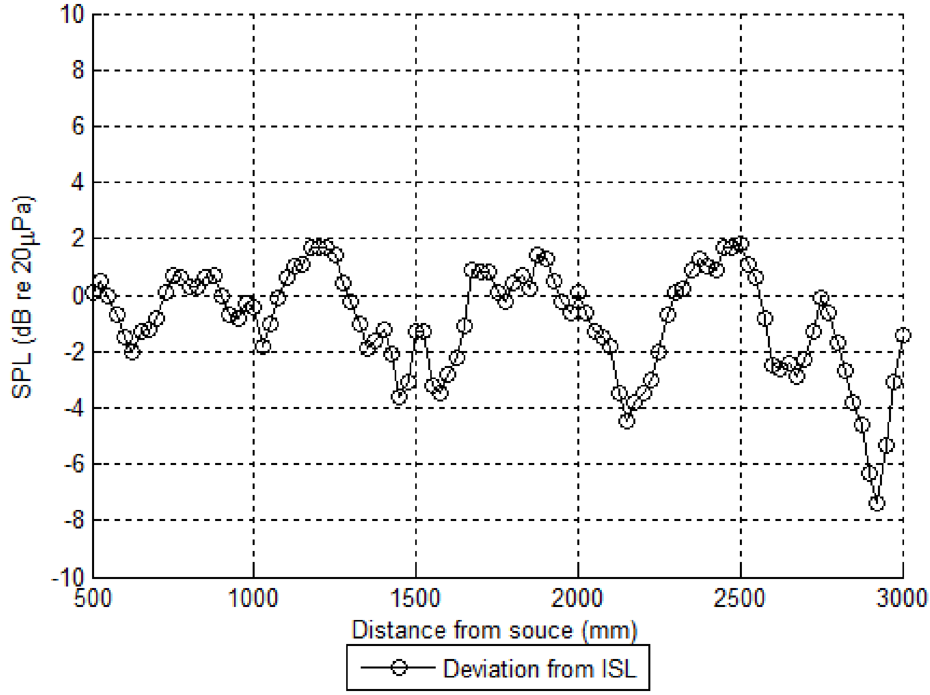

Figure A.100.—Northwest Upper Trihedral Traverse High Frequency, 2,000 Hz, Pure Tones

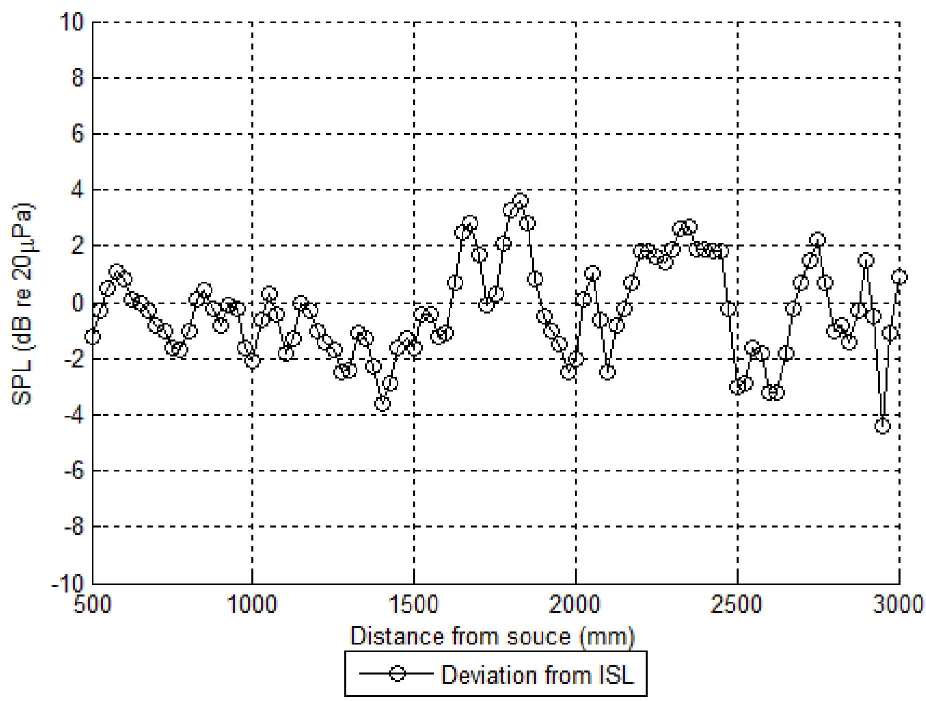

Figure A.101.—Northwest Upper Trihedral Traverse High Frequency, 2,500 Hz, Pure Tones

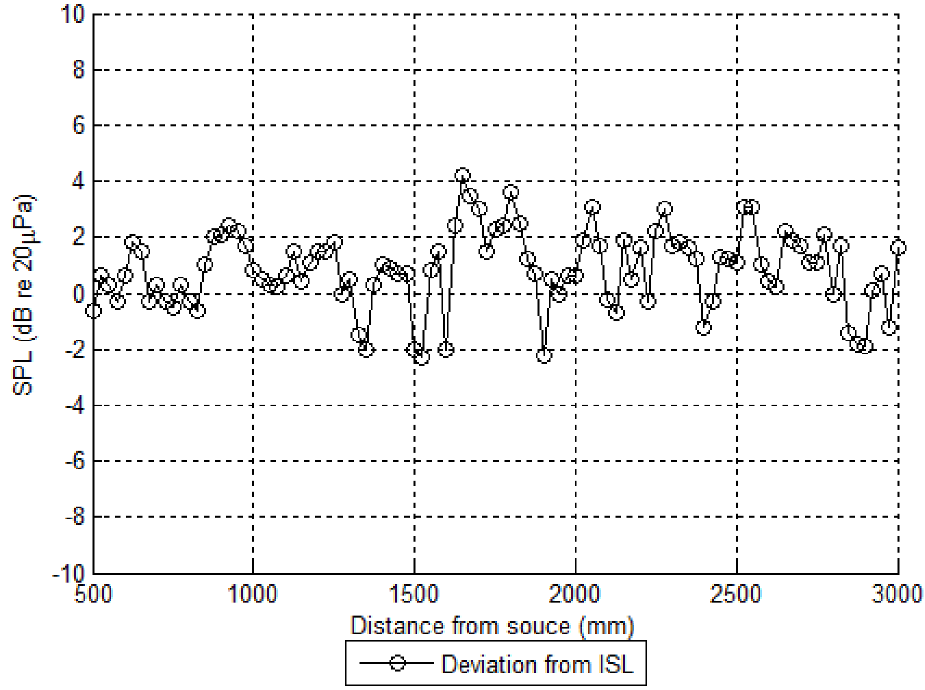

Figure A.102.—Northwest Upper Trihedral Traverse High Frequency, 3,150 Hz, Pure Tones

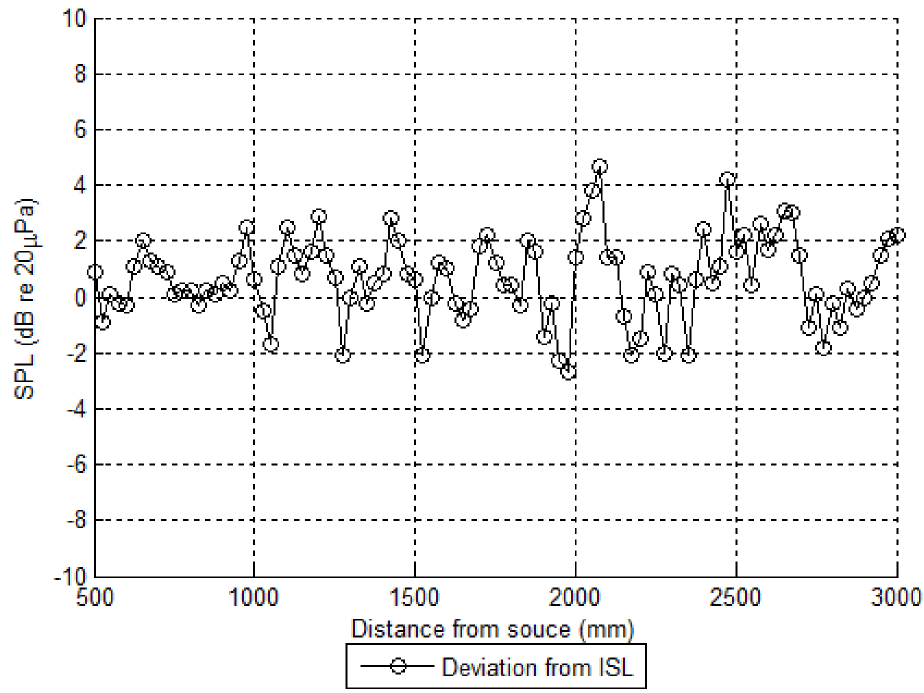

Figure A.103.—Northwest Upper Trihedral Traverse High Frequency, 4,000 Hz, Pure Tones

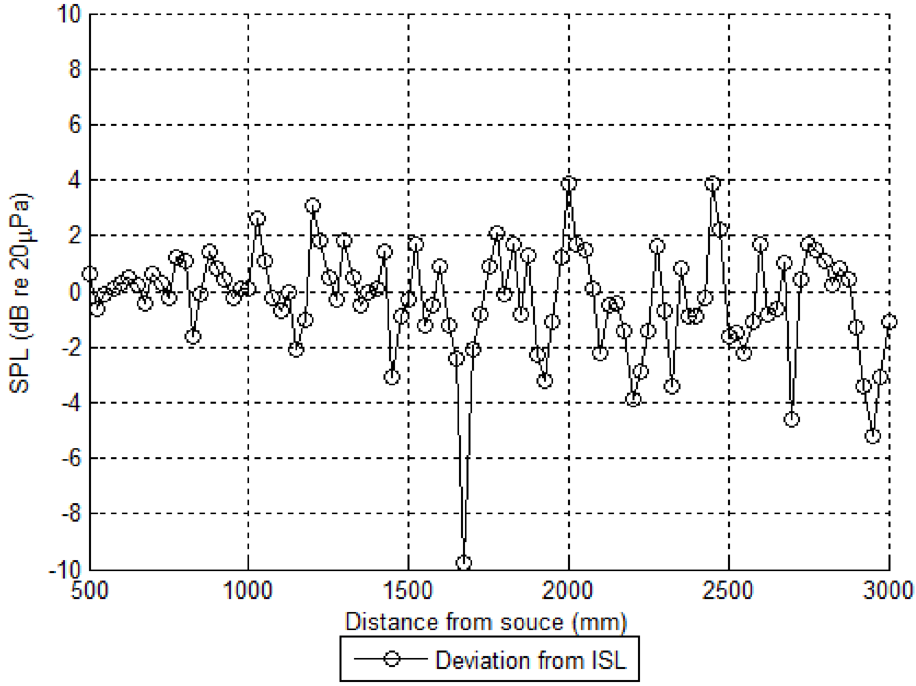

Figure A.104.—Northwest Upper Trihedral Traverse High Frequency, 5,000 Hz, Pure Tones

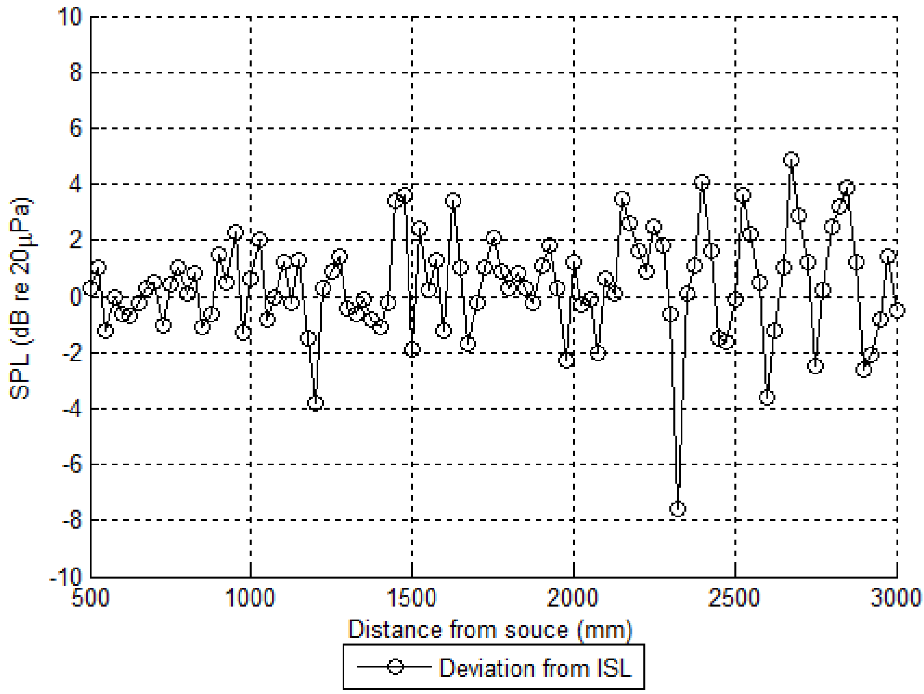

Figure A.105.—Northwest Upper Trihedral Traverse High Frequency, 6,300 Hz, Pure Tones

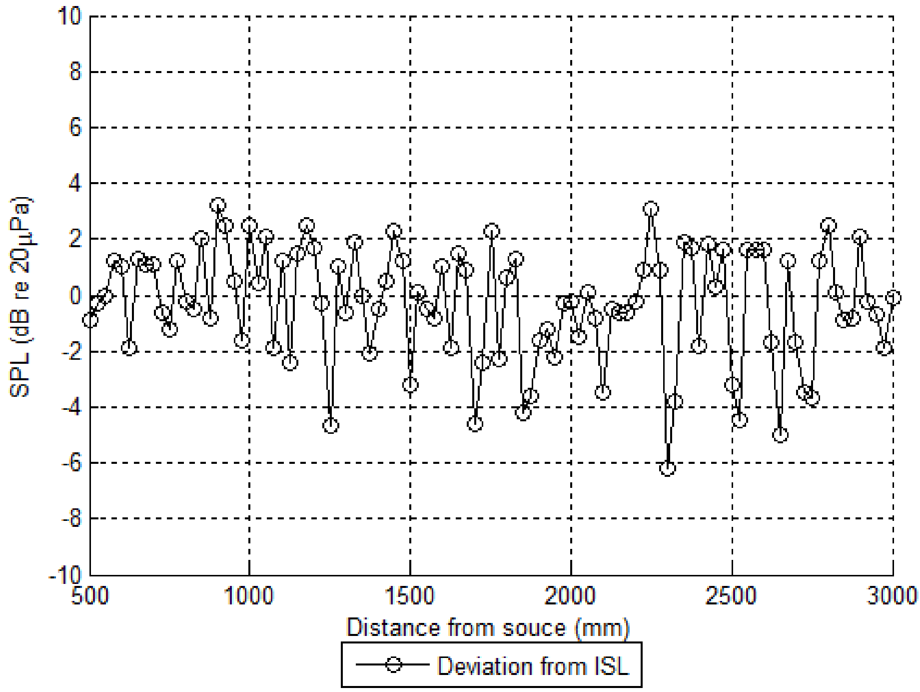

Figure A.106.—Northwest Upper Trihedral Traverse High Frequency, 8,000 Hz, Pure Tones

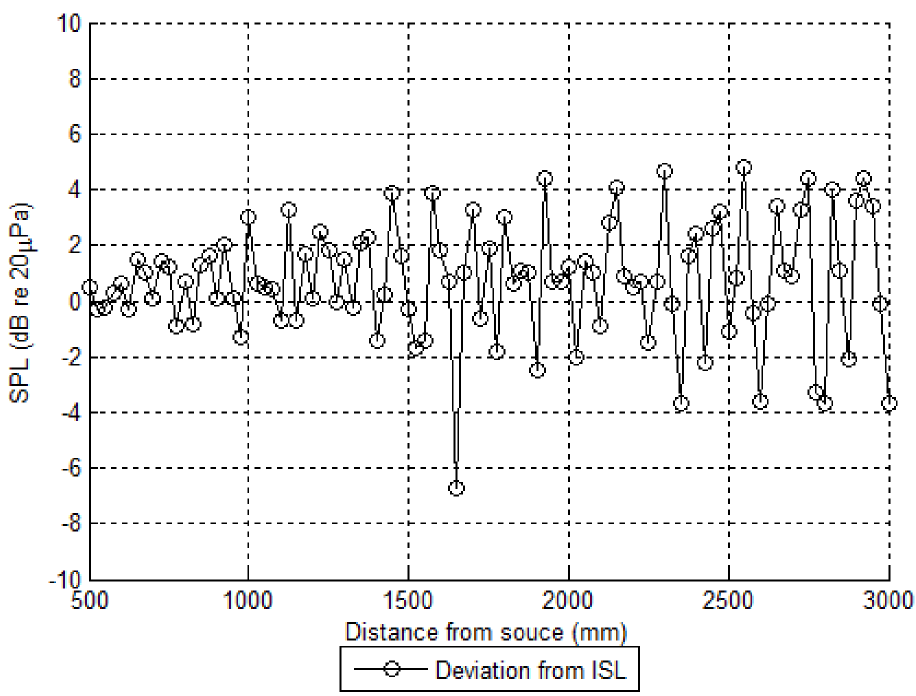

Figure A.107.—Northwest Upper Trihedral Traverse High Frequency, 10,000 Hz, Pure Tones

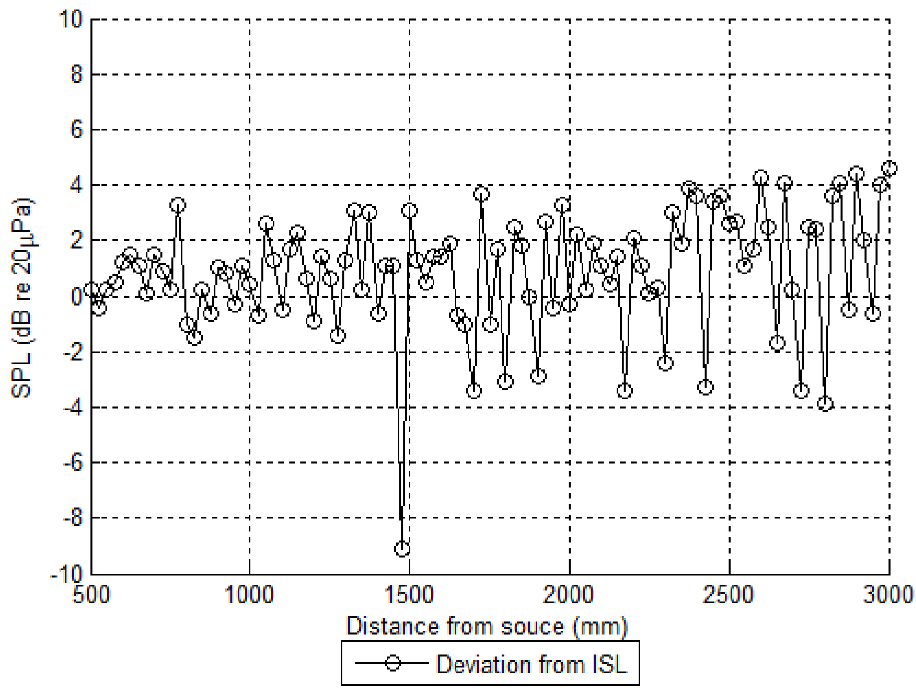

Figure A.108.—Northwest Upper Trihedral Traverse High Frequency, 12,500 Hz, Pure Tones

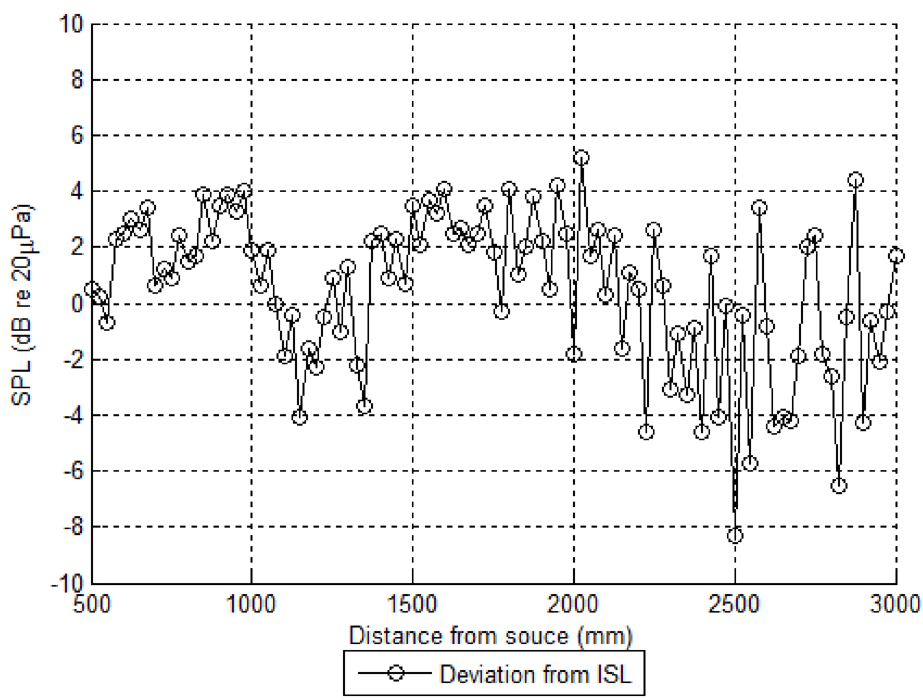

Figure A.109.—Northwest Upper Trihedral Traverse High Frequency, 16,000 Hz, Pure Tones

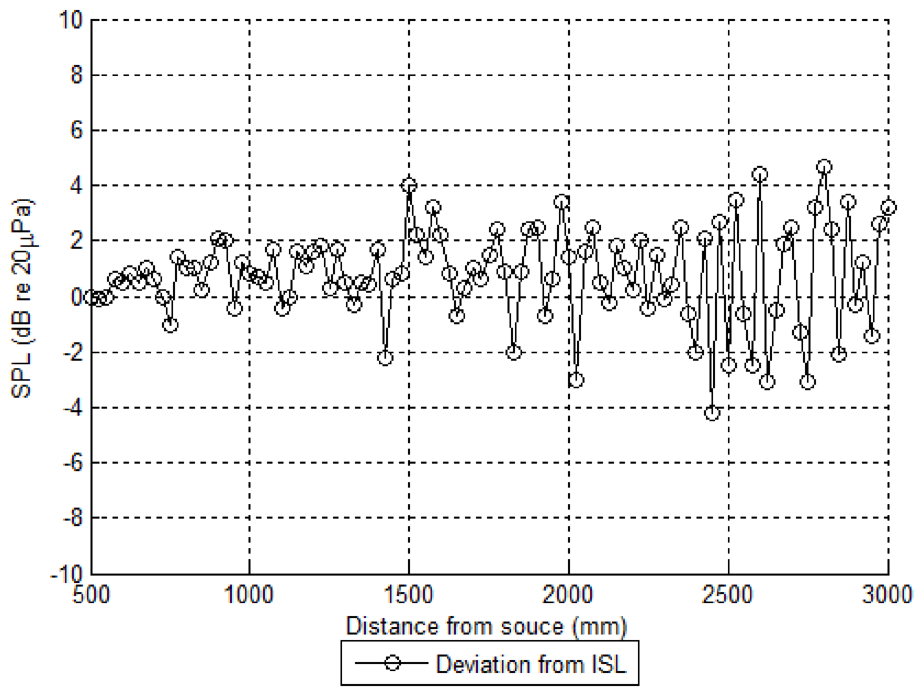

Figure A.110.—Northwest Upper Trihedral Traverse High Frequency, 20,000 Hz, Pure Tones

TABLE A.1.—NUMERICAL VALUES FOR EAST HORIZONTAL TRAVERSE

	Frequency, Hz																					
r, mm	160	200	250	315	400	500	630	800	1,000	1,250	r, mm	1,600	2,000	2,500	3,150	4,000	5,000	6,300	8,000	10,000	12,500	16,000	20,000
500	–0.5	–1.5	0.4	1.0	–0.4	–0.1	1.4	0.2	0.7	–0.8	500	–2.6	0.2	0.1	–1.7	–0.5	–0.5	1.0	1.8	–0.3	0.3	–1.3	0.3
550	–0.4	–1.7	0.5	0.7	–0.5	0.1	1.1	0.9	–0.3	–0.5	525	–2.1	0.2	0.6	–0.5	–0.3	–0.8	–0.8	2.4	0.2	–0.2	–1.2	0.1
600	–0.3	–1.6	0.5	0.4	–0.5	0.1	0.8	1.4	–0.1	–0.7	550	–1.7	–0.5	0.3	–0.2	–2.3	–2.0	0.7	1.2	–0.3	0.7	0.3	–0.5
650	–0.2	–1.6	0.6	–0.1	–0.5	0.2	0.3	1.5	0.3	–0.2	575	–1.7	–1.2	–1.4	–0.1	–1.3	–0.7	0.3	3.4	–1.2	0.4	0.8	–0.6
700	–0.2	–1.7	0.4	–0.4	–0.4	0.4	–0.7	1.3	–0.8	–0.2	600	–1.8	–0.2	–2.8	–0.7	0.2	–0.3	–0.3	–0.1	0.3	–0.5	2.0	0.1
750	–0.2	–1.5	0.3	–0.8	–0.2	0.7	–2.0	0.6	–1.7	–0.8	625	–1.7	–0.6	–2.5	–1.0	0.3	–1.6	–0.7	1.6	–2.4	1.3	1.7	1.8
800	–0.1	–1.4	0.0	–0.8	0.3	0.8	–2.8	0.0	–0.1	–0.2	650	–1.4	–0.2	–1.7	–0.7	–2.2	–1.7	0.3	–0.4	0.9	0.1	1.2	1.0
850	–0.2	–1.4	–0.4	–0.7	0.5	0.9	–2.3	–0.9	0.6	–0.2	675	–1.6	1.3	0.0	–1.2	–2.1	1.1	1.0	0.7	–1.7	–0.3	0.2	–0.5
900	–0.1	–1.3	–0.9	–0.6	1.1	0.8	–0.8	–1.4	0.4	–0.4	700	–2.0	2.3	1.3	–1.2	–0.1	1.1	–0.5	–0.2	0.7	2.7	–1.3	0.1
950	0.0	–1.1	–1.3	–0.5	1.4	0.5	0.4	–2.1	0.1	0.0	725	–2.4	1.5	1.4	–0.9	–0.4	–0.8	–1.4	1.2	–2.0	1.6	–1.4	0.5
1,000	0.1	–1.1	–2.0	–0.5	1.7	–0.1	0.5	–2.6	0.1	–0.8	750	–2.3	0.5	0.2	–1.3	–2.0	1.9	–1.6	0.8	0.9	–1.1	–0.2	0.3
1,050	0.3	–1.0	–2.3	–0.5	2.0	–0.8	0.1	–1.7	–0.3	–1.6	775	–2.8	0.7	–0.4	0.9	–2.7	2.7	–1.5	1.6	–1.7	0.9	–0.8	0.5
1,100	0.3	–1.0	–2.3	–0.6	2.2	–1.4	–0.8	0.0	–0.8	–0.9	800	–3.4	0.3	–0.8	1.3	–0.8	2.6	0.1	2.3	–0.8	–0.1	–0.7	0.6
1,150	0.6	–0.9	–1.8	–0.9	2.2	–1.8	–1.3	0.6	–1.0	–1.6	825	–2.7	–0.9	–0.4	1.2	–0.4	2.4	–1.6	1.4	–0.3	0.6	–1.3	0.7
1,200	1.0	–0.9	–1.2	–1.0	2.2	–2.6	–1.0	–0.2	–1.7	–0.9	850	–1.2	–0.5	0.4	–2.3	–0.7	3.5	–0.5	2.5	0.0	1.4	–1.8	0.5
1,250	1.2	–1.0	–0.4	–1.1	2.0	–3.4	–0.5	–1.8	–0.4	0.9	875	–0.3	–0.6	1.4	–2.3	–2.9	2.8	0.2	1.5	–0.4	0.9	–0.3	1.4
1,300	1.5	–0.8	0.3	–0.9	1.8	–4.3	–0.6	–1.6	1.2	0.3	900	0.2	–0.7	0.6	0.5	–1.0	–1.5	0.3	2.6	1.0	1.1	0.9	1.4
1,350	1.6	–0.9	1.0	–0.6	1.6	–4.5	–0.8	0.6	1.0	0.5	925	0.3	–0.6	–1.9	2.0	–1.5	–1.1	0.8	1.0	–1.2	0.6	0.6	1.8
1,400	2.0	–0.8	1.5	–0.1	1.3	–3.5	–0.5	1.7	–0.1	1.0	950	1.3	0.0	–1.8	1.9	–1.7	–2.4	1.5	0.8	0.1	0.7	–0.5	2.5
1,450	2.3	–0.7	1.8	0.3	1.1	–1.7	0.4	1.1	1.7	–1.9	975	2.3	0.3	–1.6	0.6	1.5	–2.4	0.2	–0.8	0.2	1.4	1.7	3.5
1,500	2.3	–0.6	1.9	0.9	0.9	–0.1	1.6	–0.5	2.3	–0.6	1,000	1.6	0.0	–1.6	–1.2	3.0	–0.1	0.3	–0.5	0.5	–0.4	1.1	2.4
1,550	2.4	–0.5	1.7	1.3	0.5	1.1	2.2	–1.0	–0.3	1.5	1,025	1.0	–0.1	0.7	–1.5	1.4	–1.8	0.0	–0.2	–0.2	3.2	0.9	2.1
1,600	2.5	–0.1	1.3	1.6	0.2	1.7	2.4	–0.3	–2.5	–1.4	1,050	0.4	–0.9	1.9	–0.5	0.2	0.0	2.5	–1.7	1.5	–1.6	–1.0	1.0
1,650	2.5	0.0	0.7	1.7	–0.4	2.0	2.3	–0.4	1.4	1.1	1,075	0.6	–1.2	1.5	1.3	–1.3	0.5	1.3	–0.8	0.5	1.4	0.9	–0.4
1,700	2.2	0.3	0.3	1.5	–1.3	2.5	2.0	–1.1	1.5	1.9	1,100	0.0	0.6	0.7	2.1	0.9	–0.4	–2.3	–0.1	–0.1	0.9	0.1	–1.1
1,750	2.3	0.6	–0.3	1.2	–2.4	2.9	2.1	–0.6	–1.6	–1.4	1,125	–0.9	2.0	1.2	0.8	0.9	–0.5	2.1	–0.2	2.5	1.6	0.0	–0.3
1,800	2.1	0.8	–0.6	0.6	–3.6	3.3	1.8	0.8	–1.5	–0.7	1,150	–2.5	1.5	0.3	0.2	1.3	–0.2	0.0	–1.5	–1.6	1.0	–1.2	2.5
1,850	2.0	1.0	–0.5	0.2	–4.1	3.8	1.3	1.4	1.8	1.8	1,175	–2.8	–0.1	–1.2	–0.9	0.5	–1.3	–1.4	–0.8	1.8	0.5	0.1	3.4

TABLE A.1.—NUMERICAL VALUES FOR EAST HORIZONTAL TRAVERSE

r, mm	Frequency, Hz										r, mm												
	160	200	250	315	400	500	630	800	1,000	1,250		1,600	2,000	2,500	3,150	4,000	5,000	6,300	8,000	10,000	12,500	16,000	20,000
1,900	1.6	1.3	0.0	–0.4	–3.9	4.0	0.1	0.2	0.3	0.4	1,200	–2.4	–0.3	0.0	–0.8	–1.2	–1.2	–0.2	–1.1	–2.8	2.2	–0.3	2.1
1,950	1.3	1.5	0.8	–0.9	–2.8	4.1	–0.6	–0.7	–2.3	0.3	1,225	–1.3	–0.2	1.7	–0.5	–0.8	–0.4	–0.6	–0.7	0.9	0.1	1.4	–2.5
2,000	0.9	1.5	1.9	–1.1	–1.7	3.7	0.1	1.4	3.2	0.8	1,250	0.7	–2.2	2.6	0.4	0.4	1.7	–1.0	–0.3	0.4	1.3	0.6	–1.7
2,050	0.5	1.7	2.8	–1.1	–0.6	3.1	1.1	3.7	4.8	0.4	1,275	1.8	–1.1	2.1	0.6	1.2	1.3	–1.3	–3.5	–0.6	–0.1	–1.8	0.4
2,100	0.1	1.9	3.6	–0.8	0.1	2.5	1.5	4.4	1.9	0.7	1,300	2.4	0.6	2.5	1.1	2.8	–2.6	0.3	–0.7	3.4	1.8	1.8	3.2
2,150	–0.4	2.0	4.1	–0.8	0.4	2.2	0.9	3.9	–2.0	–1.2	1,325	2.4	–0.5	1.9	0.9	0.9	–1.9	–0.7	–2.9	–4.9	0.6	0.4	0.3
2,200	–0.7	2.0	4.4	–0.8	0.5	2.4	–0.8	3.2	2.2	–0.8	1,350	2.2	–1.2	–0.1	–1.6	1.2	1.2	1.9	–0.6	3.1	–0.2	–3.4	–3.1
2,250	–1.0	2.0	4.7	–0.8	0.5	2.7	–2.8	3.7	3.5	0.5	1,375	2.0	1.2	–1.4	0.9	0.3	–0.3	–0.2	–2.3	–2.9	2.0	–0.2	–0.2
2,300	–1.0	2.1	4.6	–1.2	0.3	2.8	–3.4	4.4	1.8	–1.5	1,400	1.1	–0.1	–1.9	–6.0	0.3	0.1	–0.4	–1.2	2.1	1.0	0.4	1.4
2,350	–1.0	2.1	4.3	–1.5	0.3	2.6	–1.9	3.9	1.6	–0.3	1,425	0.9	–1.6	0.1	–3.1	0.8	–0.8	2.0	–1.8	0.8	0.0	–0.8	2.0
2,400	–0.9	2.1	4.0	–1.9	0.5	1.9	–1.0	2.2	3.5	0.5	1,450	1.0	–1.3	0.3	–2.6	–0.5	0.5	–1.5	–1.7	0.6	2.3	–0.9	0.8
2,450	–0.6	2.0	3.4	–2.2	0.8	0.7	–1.4	–0.6	2.9	–2.0	1,475	3.0	1.4	0.0	1.5	1.0	–0.9	–0.1	0.4	–2.2	1.7	1.3	1.4
2,500	–0.6	2.0	2.8	–2.3	1.0	–0.8	–2.7	–1.6	–1.8	0.7	1,500	3.4	2.2	0.0	2.5	–1.8	0.3	1.6	–0.4	3.3	0.9	1.6	0.3
2,550	–0.1	1.8	2.1	–2.1	1.3	–2.6	–3.7	–0.6	–5.0	0.7	1,525	2.5	0.6	1.3	1.2	–0.1	0.1	2.2	–0.8	–5.5	1.4	–2.1	0.1
2,600	0.1	1.7	1.1	–1.6	1.5	–3.8	–2.1	–1.0	–1.5	–1.8	1,550	1.9	–0.1	0.9	1.7	0.1	0.3	–1.9	–1.0	3.9	1.3	2.1	–1.0
2,650	0.6	1.6	0.7	–1.1	1.4	–3.8	0.1	–3.6	–2.7	1.9	1,575	3.4	0.2	2.3	–0.3	0.8	–0.2	–1.2	–0.1	–0.3	0.5	–3.4	2.1
2,700	0.6	1.4	0.5	–0.4	1.5	–3.1	1.6	–6.1	–3.8	1.0	1,600	5.0	–0.5	2.4	4.6	2.1	1.1	0.0	–0.3	0.1	0.0	–2.5	2.8
2,750	0.9	1.4	0.3	0.1	1.5	–2.5	2.1	–3.5	0.4	–2.6	1,625	5.1	–2.2	0.3	1.9	0.3	0.0	–1.9	–0.1	2.9	3.0	0.8	0.7
2,800	0.8	1.1	0.8	0.5	1.5	–2.1	2.1	–1.0	1.5	3.6	1,650	3.2	–2.8	0.9	2.8	2.6	0.3	1.2	2.3	0.3	–0.4	–0.8	0.0
2,850	1.0	1.1	1.0	0.8	1.5	–1.8	1.9	–0.9	0.0	1.1	1,675	–1.5	–3.4	–5.1	–1.2	–2.9	0.6	0.9	–1.0	–1.5	0.0	1.9	2.3
2,900	1.0	1.1	1.4	1.2	1.6	–1.7	1.7	–2.1	–2.4	–3.4	1,700	1.3	–0.9	–2.2	–0.5	–3.1	–3.6	0.2	–1.9	1.4	3.4	–2.7	1.7
2,950	1.0	1.2	1.7	1.3	1.6	–1.8	1.3	–2.7	–2.2	3.3	1,725	2.2	–1.6	–3.5	2.0	–1.8	–2.6	–1.0	0.6	1.6	2.1	–0.9	0.8
3,000	0.7	1.2	1.7	1.5	1.6	–2.0	0.8	–1.4	–1.1	2.4	1,750	1.7	–1.1	–2.1	–1.2	1.4	0.5	0.5	0.8	–2.2	0.9	–0.9	0.3
3,050	0.5	1.2	1.9	1.8	1.6	–1.8	–0.1	–0.3	–1.1	–3.8	1,775	–0.1	1.2	–3.0	4.3	3.8	0.2	1.4	–2.1	2.8	2.2	–1.8	0.9
3,100	0.3	1.4	1.8	2.1	1.9	–1.3	–0.6	0.1	–0.8	2.9	1,800	–1.2	2.9	–3.5	4.8	4.5	0.8	–0.1	–0.9	–1.1	–0.2	–2.6	1.9
3,150	0.1	1.5	1.5	2.4	2.0	–0.8	–0.7	–0.2	–0.5	2.9	1,825	0.5	2.3	–1.5	1.5	2.3	1.8	–1.1	2.6	0.6	3.3	–1.2	0.1
3,200	–0.1	1.6	1.5	2.3	2.1	0.0	–0.1	–0.7	–0.6	0.2	1,850	1.7	0.9	–0.3	3.9	–0.4	–0.5	–4.5	1.5	0.4	–1.5	–5.5	–1.6
3,250	–0.5	1.6	1.6	2.3	2.3	0.6	0.3	–0.3	–1.0	1.6	1,875	0.6	0.7	–0.5	1.0	–4.2	–2.0	2.7	–3.0	1.9	4.4	–0.4	2.7

TABLE A.1.—NUMERICAL VALUES FOR EAST HORIZONTAL TRAVERSE

r, mm	Frequency, Hz										r, mm												
	160	200	250	315	400	500	630	800	1,000	1,250		1,600	2,000	2,500	3,150	4,000	5,000	6,300	8,000	10,000	12,500	16,000	20,000
3,300	–1.0	1.7	1.8	2.4	2.3	1.4	0.3	0.5	–0.2	0.6	1,900	1.0	–0.4	–0.4	–0.9	–9.3	0.1	1.5	1.9	0.3	0.3	–4.7	1.9
3,350	–1.3	1.5	2.3	2.0	2.4	2.1	–0.2	0.5	1.7	0.2	1,925	2.4	–2.0	–0.4	0.6	–2.7	2.7	1.7	1.1	0.1	–2.4	1.1	–0.6
3,400	–1.3	1.5	3.0	1.5	2.2	2.3	–0.6	0.2	2.8	3.8	1,950	3.1	–0.8	0.2	2.8	1.9	2.7	–1.1	0.7	0.4	4.9	–6.8	2.1
3,450	–1.6	1.4	3.6	1.0	1.8	2.4	–0.7	–0.4	1.7	2.8	1,975	2.6	1.7	–0.7	–0.5	2.6	0.0	0.5	–2.9	1.8	–0.8	–0.5	–0.8
3,500	–1.8	1.0	4.2	0.2	1.5	2.5	–0.2	–0.4	0.5	1.0	2,000	1.8	1.8	0.0	2.4	3.1	–1.9	–0.3	–0.7	–3.5	0.0	–1.6	0.6
3,550	–2.1	0.6	4.8	–0.5	0.9	2.6	–0.4	0.4	–0.6	2.7	2,025	2.0	–2.6	0.5	0.0	1.9	–2.4	1.9	1.5	0.8	1.8	–2.4	1.9
3,600	–2.4	0.1	5.3	–1.1	0.9	2.1	–1.1	0.9	–1.5	2.9	2,050	1.6	–3.5	–5.0	1.5	1.3	0.8	1.0	–0.2	2.8	0.6	–0.6	3.3
3,650	–2.4	–0.6	5.4	–1.2	0.6	0.9	–2.9	0.3	–0.1	–0.8	2,075	–1.6	0.6	–2.4	2.8	–1.4	1.2	0.1	–2.3	–1.9	–1.5	–5.6	–0.7
3,700	–2.5	–0.8	5.6	–1.0	0.7	–0.5	–5.1	–1.1	2.1	–2.3	2,100	–4.3	–0.4	–0.7	2.9	–6.3	0.3	–1.3	0.1	0.4	4.4	0.9	4.2
3,750	–2.5	–1.6	5.4	–0.6	0.9	–1.8	–4.6	–1.1	2.5	1.1	2,125	–1.1	–1.9	–3.1	4.0	–0.7	0.4	1.1	1.1	1.5	–0.1	–8.2	4.0
3,800	–2.7	–1.8	5.5	0.1	1.0	–1.7	–2.8	0.5	–0.4	2.1	2,150	1.4	0.9	1.5	2.5	–1.7	–1.0	1.5	1.6	2.1	–2.1	–0.7	–3.3
3,850	–2.7	–1.9	5.3	0.8	1.0	0.4	–1.8	1.8	–4.5	3.4	2,175	1.2	1.4	4.4	–0.8	1.3	–0.2	–0.4	–0.2	–6.5	4.2	–3.5	3.7
3,900	–2.7	–1.3	4.8	1.3	0.5	2.2	–2.0	1.8	2.0	4.0	2,200	–2.4	–1.5	4.7	–0.3	4.3	0.5	–0.2	–1.3	3.3	–2.6	0.7	–4.7
3,950	–3.3	–1.7	4.3	1.7	–0.2	3.2	–3.8	1.6	3.8	1.1	2,225	–2.0	–2.1	2.9	–0.9	3.8	0.2	–6.5	–0.6	2.6	–0.2	–1.7	4.0
4,000	–3.5	–1.1	3.9	2.1	–0.9	3.9	–6.5	1.2	0.4	–6.5	2,250	2.2	0.2	3.6	2.0	3.9	–3.0	–6.5	–1.3	–3.3	4.7	–5.0	0.1
4,050	–3.8	–0.6	3.6	2.6	–2.1	3.8	–6.5	0.9	–9.0	1.5	2,275	2.9	–0.5	5.5	3.2	0.1	–1.1	–1.0	1.3	1.0	–0.7	0.7	–0.4
4,100	–3.8	0.2	3.3	2.9	–2.8	3.0	–4.4	1.5	2.0	2.3	2,300	–0.1	–0.4	4.0	3.8	0.0	–0.9	3.0	0.0	–0.1	1.7	–11.9	0.2
4,150	–3.7	0.6	3.5	3.2	–2.7	1.7	–3.2	2.3	3.8	–4.4	2,325	–5.5	2.6	–1.8	3.4	–5.7	0.2	2.5	–1.4	1.5	2.1	–0.6	0.2
4,200	–5.0	0.8	3.7	3.5	–1.7	0.1	–4.1	2.8	–1.3	–0.2	2,350	0.4	2.9	2.5	0.2	–2.5	2.4	–1.6	1.4	–0.5	–1.4	–3.1	1.9
											2,375	4.4	0.8	2.0	–0.7	1.7	3.9	1.6	0.8	1.4	2.2	–2.7	4.4
											2,400	5.0	0.7	–9.2	0.3	2.4	1.5	1.7	0.6	–1.1	1.3	–1.7	–2.5
											2,425	3.7	0.3	–5.3	3.1	3.5	–4.2	–1.3	2.9	0.2	1.9	–3.4	4.2
											2,450	1.9	–3.2	–8.8	1.0	1.6	–5.0	–5.5	1.7	2.0	–0.5	–4.2	–0.4
											2,475	2.9	–3.3	–3.6	0.1	4.5	–0.3	–2.1	–5.2	1.5	3.0	–3.0	2.0
											2,500	4.2	0.7	1.5	–1.4	3.1	1.1	2.0	0.4	0.0	–1.7	–5.1	–6.3
											2,525	4.0	1.1	–2.2	–9.4	2.0	2.8	2.9	2.8	–3.8	2.0	–2.7	4.6
											2,550	2.5	–1.0	–1.2	–2.8	0.8	2.3	0.5	–0.1	2.4	–2.3	–2.7	–2.4
											2,575	1.0	–1.4	2.2	–0.8	–3.5	0.4	–1.0	–0.1	0.4	1.9	–3.8	2.2

TABLE A.1.—NUMERICAL VALUES FOR EAST HORIZONTAL TRAVERSE

	Frequency, Hz																						
r, mm	160	200	250	315	400	500	630	800	1,000	1,250	r, mm	1,600	2,000	2,500	3,150	4,000	5,000	6,300	8,000	10,000	12,500	16,000	20,000
											2,600	1.9	0.6	1.1	4.7	2.0	–0.7	–3.4	–2.3	–3.1	–2.2	–0.9	3.1
											2,625	1.4	0.4	1.1	2.7	–1.0	–3.3	–3.8	1.5	0.9	2.1	–10.8	–3.6
											2,650	0.9	–2.3	3.8	2.4	2.0	–5.1	3.6	4.2	2.0	3.0	–0.9	0.6
											2,675	1.7	–2.5	0.7	2.4	–1.1	–8.5	3.8	1.1	1.9	1.8	–2.0	–4.1
											2,700	3.8	–0.3	1.5	1.9	3.0	–0.5	0.4	–3.6	–5.8	–9.1	–2.0	3.1
											2,725	4.1	–1.0	4.2	0.1	2.3	0.5	0.4	0.5	1.9	4.0	–5.0	–0.8
											2,750	3.7	1.1	1.7	–2.2	2.7	1.1	–2.3	–1.9	1.7	4.5	–2.5	3.3
											2,775	1.8	2.9	–2.1	–1.5	0.6	–0.5	–4.5	0.4	3.5	1.3	–1.7	2.7
											2,800	0.4	3.6	–1.6	–4.0	2.6	0.0	0.9	–0.4	–1.2	–4.1	–2.6	–1.9
											2,825	1.3	2.1	–2.5	–1.7	–6.8	–0.5	3.3	0.2	–4.2	1.5	–0.1	4.1
											2,850	1.5	0.3	–1.8	–2.6	1.6	0.2	2.9	–1.2	2.5	2.3	–6.0	0.7
											2,875	2.0	1.3	–2.5	–4.1	–0.7	–0.6	0.7	–0.9	0.2	3.7	–5.0	2.2
											2,900	1.0	3.0	–3.8	–1.1	2.2	–0.4	–2.0	1.7	4.0	–3.9	–4.3	2.0
											2,925	–0.8	4.6	–0.4	1.0	3.0	2.1	–2.1	0.1	1.4	0.8	–2.9	–3.0
											2,950	0.6	4.0	–3.5	–0.9	0.5	–0.7	0.6	1.3	–6.7	2.3	–5.2	0.1
											2,975	2.5	0.2	–2.8	2.3	1.7	2.4	1.9	1.2	–3.7	2.9	–2.7	2.2
											3,000	2.6	3.9	2.9	1.0	0.4	–0.8	1.0	–1.3	4.2	–1.6	–4.4	1.8
											3,025	0.4	–0.2	–4.0	–1.3	1.2	–2.4	2.1	0.0	4.9	0.0	–6.2	–0.6
											3,050	–0.5	1.8	–7.1	–1.3	1.2	–0.1	2.0	–1.4	0.9	2.4	–3.1	–0.9
											3,075	2.2	0.9	0.9	–4.5	5.0	–0.7	–2.4	–2.9	–6.3	3.2	–0.5	1.3
											3,100	4.3	–4.0	0.2	–6.4	3.8	–4.3	–2.2	1.2	3.4	–8.4	–6.5	0.6
											3,125	4.4	–3.2	–9.0	–8.7	2.2	–3.8	2.2	3.2	2.4	2.9	–6.0	0.3
											3,150	3.7	1.8	1.0	–2.3	–0.1	0.0	2.1	2.0	4.8	1.8	3.5	4.5
											3,175	2.7	3.1	2.4	–0.2	–1.5	1.2	3.6	–0.5	1.6	0.1	–5.8	–2.6
											3,200	3.7	0.7	0.4	–0.8	–6.3	6.8	0.4	0.8	–2.1	0.5	–6.8	5.7
											3,225	5.3	0.5	1.0	–0.6	–6.6	3.0	–0.1	–0.2	–2.0	2.8	0.5	0.2
											3,250	5.0	2.9	–0.3	–1.8	–2.4	1.7	0.6	1.0	3.0	2.3	–1.4	–0.7
											3,275	2.9	2.9	–7.7	0.0	–5.2	–0.3	1.1	5.1	1.0	–4.8	–3.0	0.7

TABLE A.1.—NUMERICAL VALUES FOR EAST HORIZONTAL TRAVERSE

r, mm	Frequency, Hz																					
	160	200	250	315	400	500	630	800	1,000	1,250	r, mm	1,600	2,000	2,500	3,150	4,000	5,000	6,300	8,000	10,000	12,500	16,000	20,000
											3,300	–0.6	1.7	0.4	–0.8	–1.6	–1.7	1.9	6.5	3.7	1.1	–3.6	3.7
											3,325	0.1	1.7	1.7	–1.0	–3.9	–2.9	–0.8	3.6	2.0	3.1	–5.3	–4.2
											3,350	2.7	1.1	–7.9	–1.4	–1.2	2.5	1.8	–1.4	–9.0	3.0	–0.8	1.3
											3,375	2.8	–2.4	–0.7	–4.6	–1.5	–1.8	2.4	0.1	3.1	–1.5	–6.1	0.0
											3,400	1.8	–0.5	3.2	0.6	–1.0	–4.4	1.4	–0.3	1.1	2.8	–4.6	3.5
											3,425	1.3	–0.6	–1.6	–5.4	–1.1	0.7	–2.8	0.9	1.4	2.0	–0.5	–1.2
											3,450	2.0	–1.6	–6.3	–1.3	–1.0	1.0	–5.2	2.8	1.3	1.3	–1.5	4.6
											3,475	1.3	–3.2	–0.1	–4.0	1.4	1.1	–0.4	2.7	0.8	–1.8	–7.2	2.8
											3,500	–3.1	0.2	–0.4	–2.3	0.4	2.5	–0.8	1.6	–1.9	–1.0	–5.4	–6.7
											3,525	–6.4	1.2	0.2	–1.5	–0.7	–0.4	1.3	–3.1	1.4	3.3	–0.4	6.0
											3,550	–2.1	–2.1	0.5	–4.1	0.5	–6.5	1.9	–1.1	0.2	2.7	–7.5	–0.4
											3,575	0.9	1.1	–1.5	0.9	1.8	2.0	0.2	1.6	0.7	–0.1	–12.1	–3.2
											3,600	0.4	4.8	–14.1	–1.7	–0.6	1.2	0.1	0.1	2.0	–1.7	–1.0	4.6
											3,625	0.0	5.2	–0.5	–5.4	2.0	1.5	–1.2	2.8	–2.3	–0.4	2.1	0.6
											3,650	1.9	0.5	1.8	–2.7	–5.1	0.5	–2.0	4.0	1.5	1.1	–5.5	–2.5
											3,675	4.3	1.6	0.7	–2.6	–2.6	1.6	–1.3	–2.6	–3.1	4.1	–11.3	3.9
											3,700	3.5	4.7	–0.3	–4.9	–4.4	–3.2	–1.0	–2.4	–1.4	2.5	–1.1	1.9
											3,725	–0.5	2.7	1.2	–4.6	–8.0	–3.4	1.1	2.6	2.4	–6.0	1.4	–0.1
											3,750	–2.8	–4.0	2.4	–1.6	–5.2	2.6	1.6	2.1	2.8	2.3	–5.0	1.2
											3,775	2.1	–0.5	1.7	–0.6	–1.7	2.1	4.8	1.4	1.8	1.1	–9.1	1.8
											3,800	5.6	3.5	1.6	–4.7	–1.6	4.3	3.5	1.0	3.1	3.6	–0.1	0.6
											3,825	6.4	2.3	1.8	–0.6	3.3	0.6	3.0	–1.4	0.5	2.3	–3.1	5.4
											3,850	5.7	–5.2	–0.2	1.8	–1.2	1.7	4.8	–2.5	–9.3	–3.4	–4.1	–3.0
											3,875	3.4	0.7	–3.3	–9.4	3.9	3.6	3.8	0.2	1.7	1.3	–8.9	3.8
											3,900	1.7	2.9	3.1	–1.2	0.3	5.7	1.5	–0.6	2.6	1.8	–0.5	–2.1
											3,925	2.6	–1.8	4.3	–1.2	2.2	1.6	–4.9	1.4	4.0	2.7	–2.5	2.3
											3,950	3.0	–1.8	0.9	2.2	0.3	3.0	–6.1	1.5	0.2	1.6	–5.4	2.5
											3,975	3.1	2.6	1.4	–0.3	–3.8	3.0	–2.0	–2.8	–2.7	2.0	–6.3	3.6

TABLE A.1.—NUMERICAL VALUES FOR EAST HORIZONTAL TRAVERSE

r, mm	Frequency, Hz																					
	160	200	250	315	400	500	630	800	1,000	1,250	r, mm	1,600	2,000	2,500	3,150	4,000	5,000	6,300	8,000	10,000	12,500	16,000	20,000
											4,000	2.5	–0.3	1.2	0.6	–2.9	1.5	1.5	0.0	–1.0	0.3	–3.5	–0.6
											4,025	1.8	–8.6	–2.3	0.2	–2.2	–5.1	2.6	0.5	–6.2	4.4	0.1	1.1
											4,050	–0.2	–0.2	–1.4	0.8	–3.7	–4.5	2.6	–1.7	0.0	2.3	–6.7	0.7
											4,075	–0.9	1.4	–3.6	2.3	–2.4	–2.5	4.1	–0.9	0.7	1.9	–5.0	–5.6
											4,100	2.2	–4.4	–7.5	–0.3	0.0	–3.0	4.8	1.4	2.0	–3.1	–6.1	–0.6
											4,125	2.2	–0.5	–4.4	–1.8	–3.2	–5.2	3.4	0.8	2.1	0.8	–4.5	4.3
											4,150	–0.3	3.6	–3.8	–3.6	–3.4	0.0	–3.8	3.7	4.9	3.0	–7.1	–2.7
											4,175	–3.5	6.4	4.1	3.4	0.0	–0.8	2.2	5.1	–0.3	–0.3	–1.5	0.1
											4,200	–2.3	–8.1	–2.5	–1.2	0.0	–1.8	–1.9	0.0	–4.3	0.0	–7.7	6.0

TABLE A.2.—NUMERICAL VALUES FOR NORTH HORIZONTAL WALL TRAVERSE

r, mm	Frequency, Hz 160	200	250	315	400	500	630	800	1,000	1,250	r, mm	1,600	2,000	2,500	3,150	4,000	5,000	6,300	8,000	10,000	12,500	16,000	20,000
500	0.2	–2.0	–1.0	0.6	–1.2	0.6	1.2	1.2	–0.6	–0.9	500	–0.1	0.8	0.6	2.4	–0.1	0.4	–0.4	0.0	1.0	0.3	0.9	–0.5
550	0.4	–2.2	–1.3	0.8	–1.4	0.7	1.3	2.3	–0.5	–0.4	525	0.1	0.3	0.5	2.2	0.1	0.9	0.8	0.8	–0.8	–1.0	0.4	–0.6
600	0.6	–2.1	–1.5	1.2	–1.4	0.6	0.9	2.6	–0.5	–0.9	550	–0.1	–0.1	–0.3	2.1	–0.2	–0.3	–1.1	0.1	–0.9	–0.9	0.2	0.0
650	0.8	–2.1	–1.7	1.4	–1.2	0.6	0.5	2.1	–0.2	–1.2	575	1.0	–1.1	–1.8	–2.2	–0.9	0.2	1.2	0.4	0.9	–0.1	0.4	0.9
700	0.9	–2.0	–1.7	1.6	–1.1	0.6	0.1	1.4	0.1	–0.3	600	0.3	–1.3	–0.5	0.0	–0.7	0.8	1.5	0.5	–0.8	0.0	0.1	0.1
750	0.8	–1.9	–1.6	1.5	–0.9	0.7	–0.3	1.3	0.7	–0.2	625	0.4	–0.2	–0.3	1.2	–0.3	1.0	–0.9	0.3	0.6	–0.8	0.6	0.9
800	1.0	–1.7	–1.4	1.4	–0.9	0.9	–0.8	0.5	0.9	–0.6	650	0.2	0.6	–0.3	1.7	–0.8	0.5	–0.1	0.1	–0.7	–0.5	0.5	1.2
850	0.8	–1.3	–1.4	1.0	–0.7	1.2	–1.1	–0.7	1.2	0.1	675	0.9	1.3	0.6	0.6	–3.0	0.3	0.8	0.6	1.2	0.3	1.5	0.7
900	0.8	–0.9	–1.5	0.5	–0.6	1.2	–1.1	–2.2	1.0	–0.6	700	1.0	0.5	0.0	–1.5	–1.8	–0.3	–1.2	1.7	0.1	–0.3	0.6	0.0
950	0.8	–0.4	–1.3	–0.1	–0.4	0.8	–1.0	–1.9	0.9	–1.8	725	0.7	–0.5	–1.5	–1.7	–0.2	–1.2	–0.2	–1.2	0.0	1.2	–0.1	0.6
1,000	0.6	0.0	–1.3	–0.6	0.1	0.3	–0.6	–1.0	–0.1	–1.2	750	0.7	–0.3	–2.4	0.0	0.3	–0.8	0.4	–0.7	0.6	0.8	–0.2	–0.1
1,050	0.4	0.4	–1.2	–1.0	0.5	–0.4	–0.5	0.1	–2.0	–1.3	775	0.8	–0.4	–1.2	2.3	–0.3	–0.1	0.0	0.4	–1.0	–1.4	0.6	–0.4
1,100	0.2	0.7	–1.1	–0.8	1.0	–1.0	–1.0	0.7	–1.9	–0.6	800	0.6	–1.2	0.1	1.3	–0.4	–1.1	2.4	–2.2	0.0	1.4	0.7	–0.4
1,150	0.0	0.9	–0.8	–0.3	1.7	–1.0	–1.3	1.9	0.6	1.0	825	1.3	–1.1	1.4	0.5	–0.3	0.4	0.8	–0.2	–1.2	1.1	–0.9	–1.4
1,200	–0.2	1.1	–0.4	0.0	1.9	–1.0	–0.8	2.6	1.9	0.2	850	1.5	0.0	1.3	–1.4	0.6	–1.1	–2.1	–2.4	–1.0	–0.3	–0.6	–0.1
1,250	–0.2	1.1	0.1	0.3	1.9	–1.2	–0.3	2.2	1.8	–1.4	875	0.9	0.3	0.2	–0.2	1.5	–0.5	–1.1	1.5	0.3	0.7	–0.1	–0.2
1,300	–0.5	1.1	0.7	0.6	1.8	–1.4	0.3	0.5	1.2	0.4	900	–0.2	0.2	0.0	–1.1	–1.4	1.9	0.6	0.0	1.0	1.4	–0.8	0.1
1,350	–0.6	1.0	1.2	0.3	1.2	–1.8	0.7	–1.9	0.9	1.2	925	0.0	0.3	–1.7	0.8	–1.1	1.1	0.5	0.3	–0.5	–0.2	–0.5	0.3
1,400	–0.7	0.7	1.7	–0.3	0.7	–1.9	0.9	–2.8	–0.7	0.8	950	0.4	–0.4	–2.7	1.2	0.0	–0.8	–0.6	0.6	1.4	0.7	0.9	–0.3
1,450	–0.6	0.4	2.1	–1.1	0.0	–1.2	1.1	–3.6	–2.5	0.2	975	0.8	–1.9	–2.7	0.4	0.3	–1.0	1.2	–1.3	0.0	–0.7	–0.1	0.4
1,500	–0.4	0.1	2.4	–2.0	–0.4	0.1	1.0	–4.8	–0.8	–0.5	1,000	0.3	–2.0	–1.5	–0.4	1.3	0.0	–0.3	–1.0	0.9	–0.6	–0.8	–1.7
1,550	–0.1	–0.1	2.4	–2.6	–0.4	1.1	0.6	–3.8	0.2	0.7	1,025	–0.6	–0.3	–0.1	–1.7	0.1	1.1	–1.1	1.0	–0.9	0.4	–1.2	0.4
1,600	0.0	–0.3	2.4	–2.3	–0.1	1.8	0.2	–0.6	–0.9	0.9	1,050	–0.9	0.5	0.6	0.4	1.0	–1.7	–0.3	0.0	–0.1	–0.2	–0.1	0.6
1,650	0.3	–0.5	2.1	–1.3	0.0	1.9	0.2	0.9	–0.7	0.0	1,075	–0.4	0.0	0.9	–2.2	–0.2	–0.9	–0.4	–0.1	0.5	0.0	–0.6	0.7
1,700	0.3	–0.5	1.5	0.2	0.0	1.8	1.1	1.1	1.6	2.2	1,100	–0.6	0.4	1.4	0.8	1.0	1.0	–0.7	1.3	–0.9	–1.4	–1.3	–1.1
1,750	0.6	–0.3	0.9	1.6	–0.4	1.6	1.8	0.8	1.8	3.1	1,125	–0.6	1.6	0.7	0.1	–0.6	–0.4	–0.9	–1.4	2.5	2.7	–1.8	–1.7
1,800	0.8	0.1	0.2	2.4	–1.0	1.3	2.0	1.3	–1.3	1.1	1,150	–0.3	1.6	–1.0	1.3	0.8	–1.8	1.0	0.7	–1.9	0.3	0.9	–0.3
1,850	1.0	0.4	–0.5	3.0	–2.1	1.2	1.1	2.0	–2.9	–1.5	1,175	–0.3	0.8	–1.2	1.3	0.0	–2.2	1.0	0.9	0.8	1.3	–0.2	–0.7

TABLE A.2.—NUMERICAL VALUES FOR NORTH HORIZONTAL WALL TRAVERSE

r, mm	Frequency, Hz																					
	160	200	250	315	400	500	630	800	1,000	1,250	r, mm	1,600	2,000	2,500	3,150	4,000	5,000	6,300	8,000	10,000	12,500	16,000	20,000
1,900	1.0	0.9	–1.2	3.2	–2.9	1.2	–0.3	1.6	0.2	–1.9	1,200	–0.8	0.5	–0.8	–1.4	0.4	0.9	–1.0	–2.4	–1.2	–0.5	–2.3	–0.9
1,950	0.9	1.2	–1.1	3.0	–3.2	1.3	–1.3	0.1	0.6	–2.0	1,225	–1.0	0.9	–2.1	–1.1	2.4	1.3	0.0	0.6	0.9	2.1	0.1	0.6
2,000	0.9	1.5	–0.7	2.4	–2.8	1.4	–0.2	0.0	0.8	–0.3	1,250	–0.6	0.1	0.0	–2.8	–1.1	0.3	2.0	–0.1	0.1	–0.2	–1.3	–0.1
2,050	0.7	1.7	0.0	1.4	–2.0	1.4	1.3	1.3	2.3	0.0	1,275	0.1	–0.8	1.0	0.0	1.9	0.1	0.0	–3.1	–2.0	1.9	0.9	0.6
2,100	0.5	1.9	1.0	0.3	–1.5	1.6	1.8	1.5	3.1	1.1	1,300	0.4	–1.7	1.1	–0.6	0.0	–1.7	–0.6	2.0	3.2	–1.0	0.8	–0.1
2,150	0.1	1.8	1.7	–0.5	–1.3	1.8	1.0	–1.2	1.0	2.2	1,325	0.5	–0.8	2.7	1.2	1.5	1.2	–0.5	2.8	–3.4	1.8	–0.6	–3.2
2,200	–0.3	1.7	2.3	–0.6	–1.5	2.0	–0.9	–5.4	–0.5	2.5	1,350	0.7	–0.3	3.2	0.7	0.2	1.7	–1.1	–0.9	2.2	–0.4	0.2	1.9
2,250	–0.8	1.4	2.7	0.0	–1.9	1.8	–0.7	–2.2	2.0	3.0	1,375	0.4	0.1	1.7	–0.6	1.9	1.8	–1.7	0.7	1.6	2.2	–1.4	1.0
2,300	–1.1	0.7	2.6	1.1	–2.1	1.2	2.2	1.2	3.0	3.0	1,400	–0.4	–1.0	–0.5	–0.9	1.5	–1.2	–1.5	0.5	–0.4	–0.6	–3.5	1.0
2,350	–1.9	0.2	2.4	1.8	–1.8	–0.2	4.0	1.4	2.0	0.1	1,425	–1.6	–3.0	–2.3	–1.7	0.3	–1.7	0.7	1.3	2.1	1.4	0.5	–3.0
2,400	–2.4	–0.4	2.0	2.3	–0.9	–1.6	4.5	0.1	0.9	–1.4	1,450	–3.0	–0.6	–2.6	–1.3	1.0	1.5	–1.9	0.0	–0.2	–3.3	–0.6	–2.3
2,450	–2.8	–0.9	1.3	2.5	0.1	–2.1	3.2	–1.1	0.7	–1.6	1,475	–3.4	1.2	–1.1	–1.5	–0.2	1.4	1.5	1.1	–3.9	3.1	1.6	2.2
2,500	–2.9	–1.4	0.6	1.9	0.6	–1.1	0.2	0.7	–1.4	–3.2	1,500	–2.1	1.0	–1.4	1.1	1.8	0.2	–3.5	–1.4	0.3	–2.7	0.6	0.1
											1,525	–0.6	0.8	0.9	–1.2	–1.2	1.8	1.0	–3.0	–0.2	–0.2	1.8	–0.4
											1,550	0.8	2.1	2.8	1.3	–1.4	0.4	2.3	1.4	1.3	3.0	–2.5	–0.1
											1,575	1.7	2.4	1.6	–0.1	1.5	–1.0	–0.4	2.0	–0.3	–1.3	1.8	1.1
											1,600	1.2	0.9	2.0	1.7	1.4	–0.4	–1.5	–1.7	1.3	1.7	0.8	–2.8
											1,625	0.6	–0.5	1.9	–0.1	0.1	1.3	1.2	0.1	–3.8	–0.8	0.1	0.7
											1,650	–0.4	–1.8	–0.2	–2.1	0.1	2.3	0.7	1.0	3.9	1.5	0.4	1.6
											1,675	–2.2	–0.2	–0.7	0.8	3.2	0.5	1.8	–0.4	–5.5	0.4	–2.8	–0.6
											1,700	–4.2	2.9	–1.7	–1.9	0.2	–0.4	3.4	–0.9	2.0	1.1	2.4	–1.4
											1,725	–3.7	4.6	–4.5	2.2	1.3	0.8	0.7	1.2	0.9	–0.3	–0.7	1.0
											1,750	–2.1	4.8	0.7	1.0	3.1	1.1	0.6	3.7	–0.5	1.7	1.0	–1.6
											1,775	–1.2	4.4	1.1	3.7	3.3	2.5	–1.3	0.6	1.1	2.6	–2.3	–3.3
											1,800	–0.5	4.6	–0.4	3.2	2.4	1.9	0.7	–3.5	1.3	–1.5	1.8	1.3
											1,825	0.3	3.5	1.8	2.8	0.9	–0.3	–2.3	1.5	–1.6	2.5	1.2	–0.8
											1,850	1.3	0.8	1.3	2.6	1.7	1.1	0.1	0.3	1.2	0.3	–4.0	–1.0
											1,875	1.8	–1.4	–0.3	1.5	0.3	1.2	2.4	–2.3	1.1	–1.3	1.4	1.2

TABLE A.2.—NUMERICAL VALUES FOR NORTH HORIZONTAL WALL TRAVERSE

r, mm	Frequency, Hz																						
	160	200	250	315	400	500	630	800	1,000	1,250	r, mm	1,600	2,000	2,500	3,150	4,000	5,000	6,300	8,000	10,000	12,500	16,000	20,000
											1,900	1.9	0.6	2.0	3.4	1.0	–4.9	1.1	–1.7	0.4	3.9	0.4	–1.0
											1,925	0.7	0.5	0.9	0.4	2.6	–2.6	–0.5	1.2	–0.6	–4.7	–2.8	0.2
											1,950	–0.6	–1.3	0.4	3.1	3.6	3.2	–2.5	1.1	2.8	1.3	0.6	0.2
											1,975	–0.6	–0.5	2.6	3.1	2.9	3.2	–0.5	0.5	0.3	1.9	0.2	2.1
											2,000	–0.7	1.3	1.7	3.4	0.4	–0.1	3.1	1.3	0.0	0.5	2.3	0.3
											2,025	–1.5	0.6	–0.1	1.5	1.9	–0.9	0.4	–1.0	2.8	2.1	–2.3	–3.7
											2,050	–3.2	0.6	1.7	3.2	1.5	0.8	–2.4	–0.4	0.5	–1.5	0.8	1.2
											2,075	–5.2	2.3	–0.6	2.3	2.3	–3.1	0.6	1.8	–0.1	0.6	–1.4	–1.1
											2,100	–7.2	2.0	–3.0	0.9	0.1	0.7	–2.2	–3.0	0.2	0.7	2.6	–1.7
											2,125	–5.5	2.2	–0.8	4.8	0.0	2.6	–1.3	–1.0	0.2	2.0	–6.6	1.3
											2,150	–1.7	0.1	–5.9	1.9	–7.7	1.8	1.5	0.9	2.6	–2.2	0.3	–4.0
											2,175	1.0	0.5	–1.5	2.8	–2.5	2.1	3.3	1.7	2.3	–2.9	–3.8	1.9
											2,200	2.3	0.5	0.0	–3.7	1.0	2.8	3.4	0.7	–0.3	1.8	1.8	–4.3

TABLE A.3.—NUMERICAL VALUES FOR NORTH UPPER DIHEDRAL TRAVERSE

r, mm	Frequency, Hz																				
	160	200	250	315	400	500	630	800	1,000	1,250	1,600	2,000	2,500	3,150	4,000	5,000	6,300	8,000	10,000	12,500	16,000	20,000
500	1.0	0.2	–0.6	–1.0	0.0	–0.7	–0.8	–1.2	0.8	0.4	–0.9	0.4	–1.3	0.6	0.5	–0.2	–0.7	–0.3	0.1	–0.6	0.9	–0.6
525	1.2	0.2	–0.5	–0.8	0.2	–0.9	–0.7	–1.4	0.5	0.4	–0.6	–0.1	–0.6	1.5	–0.5	1.5	0.6	–0.5	0.1	0.7	1.5	–0.3
550	1.1	0.2	–0.4	–0.7	0.3	–1.0	–1.0	–1.6	0.5	0.8	–0.1	–0.7	0.2	–0.2	0.6	0.3	3.0	–0.1	–0.5	–0.3	0.8	–0.7
575	1.1	0.2	–0.3	–0.7	0.5	–1.5	–0.9	–1.8	0.3	0.8	0.1	–0.5	1.0	0.4	0.8	–1.3	2.3	–0.5	0.5	0.8	0.0	–0.4
600	1.3	0.3	–0.1	–0.7	0.4	–1.6	–1.1	–2.0	0.1	0.5	0.1	0.5	1.1	–0.5	1.1	0.9	1.2	–1.4	0.9	–0.2	0.5	0.0
625	1.4	0.2	0.0	–0.6	0.6	–1.9	–0.6	–1.9	0.3	–0.1	–0.2	0.8	–0.9	0.3	0.8	–0.9	2.1	0.1	0.4	1.4	1.3	–0.9
650	1.4	0.3	0.1	–0.7	0.8	–2.0	–0.1	–1.4	0.6	–0.8	–0.6	0.1	–1.9	1.0	0.5	0.3	1.6	–0.3	0.8	1.0	0.7	0.1
675	1.3	0.3	0.3	–0.6	0.9	–2.1	0.5	–0.7	0.9	–0.4	–0.5	–1.0	0.4	–0.8	0.2	–1.5	1.4	–1.8	–1.4	0.9	0.9	0.1
700	1.3	0.4	0.5	–0.4	1.1	–1.9	0.8	–0.2	1.2	0.3	–0.4	–0.9	1.0	0.5	–0.2	–1.0	0.8	–0.5	–1.8	1.3	2.6	0.0
725	1.4	0.4	0.7	–0.3	1.1	–1.8	1.0	0.2	1.2	1.1	0.1	0.0	–0.9	0.5	–0.3	–0.1	0.5	0.5	0.9	0.2	1.4	0.9
750	1.3	0.4	1.0	–0.4	1.2	–1.6	1.1	0.3	1.1	1.4	0.7	0.9	–1.2	0.4	–0.9	–0.6	–0.7	–1.3	0.2	0.8	1.0	–0.8
775	1.4	0.5	1.0	–0.4	1.2	–1.5	1.0	0.1	0.8	1.5	0.9	1.3	–0.2	–3.0	–1.3	0.5	1.0	0.0	–1.1	2.1	1.4	0.2
800	1.4	0.6	1.2	–0.7	1.1	–1.4	1.0	–0.2	0.6	0.7	0.8	1.0	1.2	1.0	–1.6	–0.5	1.4	0.0	–0.7	1.2	1.9	0.7
825	1.2	0.7	1.4	–0.8	1.1	–1.1	0.8	–0.6	0.2	0.3	0.4	–0.3	1.8	0.0	1.1	0.8	0.1	–1.2	0.1	2.1	0.5	0.4
850	1.2	0.7	1.4	–1.0	1.0	–1.0	1.0	–0.5	–0.6	–0.6	0.4	–1.5	0.3	–1.5	–0.8	1.5	–1.6	1.3	–1.0	0.7	–0.3	0.4
875	1.0	0.9	1.4	–1.3	0.7	–0.6	0.9	0.0	–1.1	–1.5	0.2	–0.6	–2.2	–1.8	0.7	0.4	–1.0	–1.5	–2.2	1.2	0.0	–0.1
900	0.8	0.7	1.3	–1.7	0.5	–0.6	0.9	0.8	–1.8	–2.5	0.0	1.0	–1.7	–1.2	0.6	–0.7	0.1	0.9	–1.0	0.8	–0.4	0.6
925	0.3	0.8	1.5	–1.8	0.3	–0.3	1.3	1.5	–1.9	–2.9	–0.1	0.9	–0.9	1.2	0.3	–0.9	1.5	–0.3	–0.7	0.4	1.1	0.4
950	0.7	1.0	1.5	–1.8	–0.1	–0.1	1.4	1.9	–1.4	–1.9	0.1	0.3	–0.1	0.2	–1.7	–1.2	1.7	0.8	0.4	1.0	–0.6	–1.4
975	0.6	1.1	1.5	–2.0	–0.4	0.1	1.8	2.1	–0.8	–0.9	0.2	–0.5	0.6	0.3	1.8	0.6	–1.4	0.6	1.0	–1.8	–2.7	0.0
1,000	0.4	1.2	1.5	–1.9	–0.7	0.4	1.8	2.0	0.0	–0.1	0.3	–1.1	–0.3	–2.7	2.6	0.5	–2.5	–2.2	–0.5	0.1	–3.5	–2.1
1,025	0.2	1.2	1.4	–2.0	–1.0	0.8	1.7	1.6	0.4	0.5	–0.4	–1.6	–1.4	0.2	0.7	0.6	–2.9	0.9	1.4	–0.3	–0.6	–0.8
1,050	0.0	1.4	1.4	–1.8	–1.2	1.1	1.5	1.0	0.6	0.5	–0.9	–1.1	–1.9	0.6	1.1	1.0	–0.5	–0.1	–0.1	0.9	0.2	–0.4
1,075	–0.1	1.4	1.2	–1.5	–1.6	1.3	1.0	0.5	0.4	0.3	–1.0	–0.3	–0.9	1.5	0.9	2.2	–0.8	2.0	0.4	1.6	–0.5	–0.9
1,100	–0.4	1.4	1.0	–1.0	–1.8	1.5	0.7	0.2	0.1	0.2	–0.9	0.1	0.1	3.0	–1.4	–0.2	–0.2	–1.1	3.3	–0.3	2.1	0.8
1,125	–0.5	1.4	0.8	–0.7	–2.0	1.5	0.5	0.5	–0.2	0.0	–1.3	0.4	–0.3	–0.2	–2.0	0.6	0.0	2.6	1.9	0.4	1.8	–2.1
1,150	–0.6	1.3	0.5	–0.3	–2.0	1.5	0.4	0.9	–0.1	–0.2	–0.8	1.4	–2.1	0.9	2.0	0.6	–1.4	–1.0	–1.5	–1.9	1.9	–0.9
1,175	–0.8	1.3	0.3	0.2	–2.0	1.3	0.2	1.2	0.2	0.2	–0.2	1.6	–0.3	0.3	0.0	–0.6	–0.1	1.7	1.5	–0.3	2.5	0.4

TABLE A.3.—NUMERICAL VALUES FOR NORTH UPPER DIHEDRAL TRAVERSE

r, mm	Frequency, Hz																					
	160	200	250	315	400	500	630	800	1,000	1,250	1,600	2,000	2,500	3,150	4,000	5,000	6,300	8,000	10,000	12,500	16,000	20,000
1,200	–1.0	1.3	0.1	0.3	–1.8	0.9	0.5	1.5	0.4	0.6	–0.5	–0.4	–0.2	0.9	–0.1	1.0	–4.6	–1.1	1.8	1.8	3.0	1.2
1,225	–1.1	1.2	–0.2	0.6	–1.7	0.5	1.0	1.6	0.4	0.7	–0.4	–3.3	–1.4	1.5	–0.1	1.4	–1.2	3.4	–1.6	2.0	2.8	–0.7
1,250	–1.3	1.2	–0.3	1.0	–1.5	0.0	1.4	1.0	0.2	0.4	–0.3	–1.5	0.2	4.5	–2.8	0.9	–2.9	1.9	2.7	1.2	2.3	1.6
1,275	–1.4	1.0	–0.6	1.3	–1.2	–0.6	1.8	–0.1	–0.6	0.0	–0.1	0.5	1.0	2.8	1.3	0.2	–0.7	3.2	1.0	–1.8	1.9	2.0
1,300	–1.6	0.9	–0.8	1.6	–1.0	–1.3	2.1	–1.0	–1.5	–1.2	0.1	0.5	–0.5	2.8	–1.7	1.3	–0.3	1.1	1.8	1.5	1.5	0.6
1,325	–1.5	0.6	–0.9	1.6	–0.6	–1.8	2.4	–2.5	–1.4	–1.9	0.2	0.4	–1.1	4.2	–2.5	–0.6	–4.3	2.7	1.6	1.6	2.0	–0.5
1,350	–1.5	0.5	–1.2	1.8	–0.4	–2.2	2.2	–2.5	–0.6	–1.2	–0.8	1.4	–1.8	0.1	–1.2	0.4	–5.3	–1.0	–3.1	–0.7	0.3	–1.2
1,375	–1.5	0.4	–1.2	1.6	–0.2	–2.3	1.4	–1.6	0.8	0.6	–1.8	1.4	–5.1	4.1	–2.3	2.7	–1.2	1.7	1.3	0.4	0.7	1.5
1,400	–1.5	0.1	–1.1	1.6	0.1	–2.1	0.6	–0.2	1.7	2.2	–1.2	–0.8	–2.5	4.3	–3.0	2.0	–3.3	1.8	–1.4	2.0	0.8	0.2
1,425	–1.4	–0.2	–1.3	1.4	0.2	–1.7	–0.2	0.9	2.2	2.3	–0.1	–3.5	0.0	3.5	–8.4	1.6	0.3	1.4	–0.5	2.7	1.4	0.1
1,450	–1.5	–0.3	–1.2	1.4	0.5	–1.0	–0.9	1.8	2.2	1.6	0.0	–1.1	–2.3	2.6	–3.9	3.3	–2.5	–4.1	–0.1	–2.0	1.6	–1.5
1,475	–1.3	–0.6	–1.2	1.4	0.6	–0.5	–1.2	2.3	1.5	0.1	0.0	0.7	–2.1	3.9	–3.0	3.1	–2.7	0.7	–1.3	–4.3	0.8	0.2
1,500	–1.1	–0.8	–1.0	1.3	0.8	0.1	–1.4	2.4	0.0	–1.8	–0.6	1.0	–3.0	3.9	–3.3	–0.6	–4.9	–1.0	0.7	0.7	0.6	–1.2
1,525	–0.9	–1.2	–1.0	1.2	0.7	0.4	–1.3	2.5	–2.0	–2.4	–0.7	1.6	–0.8	2.3	–5.1	2.9	–3.3	–1.8	–2.9	0.7	–1.5	0.4
1,550	–0.9	–1.5	–0.9	1.2	0.9	0.7	–0.8	2.3	–3.7	–1.1	–1.1	1.1	1.2	3.2	–1.7	3.3	–6.4	0.6	2.4	–3.3	–1.2	2.0
1,575	–0.7	–1.7	–0.7	1.1	0.9	0.7	–0.3	2.2	–4.1	0.3	–1.1	–0.1	–0.1	4.1	–0.5	–0.1	1.3	1.1	–4.4	–0.8	–0.8	0.4
1,600	–0.6	–1.9	–0.8	0.9	0.8	0.6	0.1	2.3	–3.3	1.2	–0.1	–1.1	–3.3	3.6	–0.3	1.6	–3.2	1.1	0.0	0.7	0.6	1.7
1,625	–0.3	–2.2	–0.8	0.9	0.9	0.5	0.2	2.1	–2.4	1.6	1.3	1.2	0.6	1.3	–2.3	0.0	–0.8	0.7	–0.2	–4.5	1.4	–0.5
1,650	–0.2	–2.2	–0.6	0.8	0.7	0.3	0.0	2.1	–1.5	1.9	1.8	3.1	2.8	2.2	–0.7	1.5	0.1	2.8	0.7	0.5	–1.4	–0.6
1,675	–0.1	–2.4	–0.7	0.8	0.6	0.2	–0.1	1.9	–0.5	2.1	1.3	2.4	1.5	0.4	–0.2	–0.4	–1.4	–0.6	0.1	0.7	–2.6	1.2
1,700	0.1	–2.5	–0.7	0.8	0.6	0.3	–0.6	1.6	0.9	2.0	–0.6	0.1	1.0	1.6	1.8	–2.2	–2.3	–0.3	–0.1	–5.8	–1.1	–0.4
1,725	0.3	–2.4	–0.7	0.8	0.4	0.4	–0.9	1.0	2.0	1.5	–2.1	–1.9	0.2	1.8	3.0	–4.0	0.2	–0.9	–2.2	0.8	–1.3	0.4
1,750	0.4	–2.4	–0.8	0.7	0.1	0.5	–1.1	0.2	3.0	0.5	–2.5	–1.0	–1.8	1.2	1.4	–1.0	–4.2	–1.7	–1.4	0.3	0.0	–1.8
1,775	0.4	–2.3	–0.8	0.6	–0.1	0.8	–0.7	–0.2	3.2	–0.8	–1.3	–0.4	1.0	2.8	–4.5	–0.2	–4.2	–0.9	0.0	–1.8	2.9	–1.2
1,800	0.4	–1.9	–0.9	0.6	–0.1	1.3	–0.3	0.0	3.1	–1.1	–0.7	1.1	2.9	–3.7	–3.9	–2.3	–2.4	–1.1	0.7	–0.2	–1.2	–1.7
1,825	0.6	–1.5	–0.9	0.5	–0.2	1.8	0.3	0.9	2.6	–0.2	–0.4	2.7	2.5	–1.3	0.8	2.9	0.3	0.6	–1.8	–4.0	–6.1	–2.1
1,850	0.7	–1.4	–1.0	0.6	–0.3	2.0	0.7	1.9	1.4	0.7	0.9	3.1	1.9	–1.6	2.5	5.0	–0.3	1.8	–0.1	3.1	–1.1	–0.8
1,875	0.7	–1.1	–1.1	0.6	–0.3	2.3	1.1	2.5	–0.5	1.3	1.8	1.5	1.7	6.4	–1.7	2.0	–0.8	–7.3	–4.1	–1.0	–0.1	1.7

TABLE A.3.—NUMERICAL VALUES FOR NORTH UPPER DIHEDRAL TRAVERSE

r, mm	Frequency, Hz																				
	160	200	250	315	400	500	630	800	1,000	1,250	1,600	2,000	2,500	3,150	4,000	5,000	6,300	8,000	10,000	12,500	16,000	20,000
1,900	0.7	–0.9	–1.3	0.5	–0.2	2.4	1.4	3.2	–1.9	1.6	1.5	–2.2	–3.0	6.1	–7.3	–4.2	1.0	0.6	4.3	–0.4	–6.8	1.1
1,925	0.7	–0.7	–1.3	0.2	–0.1	2.4	1.5	3.3	–1.9	1.8	0.6	–2.9	–6.1	3.9	–2.4	–1.5	–4.2	–1.0	–8.9	2.2	–4.5	1.2
1,950	0.7	–0.5	–1.3	0.2	0.0	2.4	1.1	3.0	–1.4	2.4	–0.8	–1.8	–4.7	2.1	1.9	4.3	–4.3	–0.8	4.1	–8.0	0.4	1.5
1,975	0.5	–0.2	–1.3	0.0	0.2	2.0	0.3	2.5	–1.2	2.7	–1.8	–3.8	–1.6	–3.8	1.7	1.1	–0.5	2.6	–2.4	4.5	–2.1	0.5
2,000	0.6	0.0	–1.2	–0.3	0.4	1.7	–0.6	1.8	–1.2	2.7	–2.2	–4.2	1.8	1.2	3.0	–3.0	–1.4	–0.8	5.0	–3.8	–3.6	1.2
2,025	0.4	0.2	–1.1	–0.5	0.5	1.3	–1.7	1.1	–1.7	2.3	–1.5	0.3	4.9	2.6	–2.0	–2.6	–2.6	0.3	0.6	0.5	–2.3	–0.4
2,050	0.3	0.3	–0.9	–0.8	0.6	0.9	–2.4	0.9	–2.2	1.7	–1.8	2.8	4.9	5.3	–0.8	–0.2	1.6	3.2	2.4	1.3	–2.1	–1.3
2,075	0.2	0.6	–0.9	–1.0	0.6	0.4	–2.5	1.4	–1.6	0.5	–2.0	2.6	3.2	6.2	–5.3	–0.1	1.3	–3.0	3.2	–4.8	1.0	0.3
2,100	–0.1	0.5	–0.7	–1.3	0.5	0.2	–2.0	2.0	–0.2	–0.2	–2.2	1.2	1.6	4.9	0.2	–0.2	0.0	0.6	0.5	4.2	–2.8	2.1
2,125	0.0	0.6	–0.6	–1.4	0.4	0.3	–1.3	2.5	1.2	0.4	–2.1	1.8	–2.9	3.3	–0.4	–4.1	0.0	2.3	0.3	–1.3	2.3	1.7
2,150	–0.3	0.7	–0.5	–1.6	0.2	0.3	–0.5	2.8	1.8	0.8	–2.1	2.5	–5.1	–3.5	–0.1	–1.0	2.0	1.1	–0.4	–0.5	–2.1	1.3
2,175	–0.4	0.7	–0.4	–1.5	0.0	0.6	–0.1	2.9	1.9	0.9	–0.6	1.0	–0.8	0.5	–2.6	3.9	0.7	1.4	1.8	–0.7	–3.9	0.2
2,200	–0.6	0.6	–0.3	–1.7	–0.4	1.0	0.1	2.4	0.8	0.2	2.2	0.3	–0.1	0.0	–6.9	0.9	–4.4	1.8	1.0	3.1	–0.3	–2.4
2,225	–1.0	0.7	–0.2	–1.5	–0.6	1.4	–0.2	2.1	–0.7	–1.1	2.4	1.8	–0.4	2.2	–1.9	–1.7	–3.0	0.2	–4.8	0.5	–3.5	–2.0
2,250	–1.2	0.5	–0.1	–1.4	–0.9	1.6	–0.7	1.3	–1.8	–1.8	4.1	1.0	1.5	1.0	–3.1	0.5	–0.6	0.6	1.2	3.0	–3.4	1.5
2,275	–1.3	0.3	–0.1	–1.3	–1.1	1.8	–1.8	0.8	–1.7	–1.5	3.8	–3.4	0.7	1.6	–3.8	0.4	1.6	3.3	3.0	–1.3	–0.1	1.6
2,300	–1.6	0.2	0.0	–1.0	–1.3	1.8	–3.0	0.8	–0.1	–0.1	3.5	–5.2	1.6	3.7	–9.6	–0.2	–0.9	0.7	2.0	2.2	–5.2	0.9
2,325	–1.8	0.0	0.0	–0.8	–1.5	1.6	–4.3	1.3	1.4	0.7	2.0	–0.8	4.1	3.2	2.1	–1.1	1.7	1.8	–7.6	–0.4	–0.5	–2.3
2,350	–2.0	–0.2	–0.1	–0.6	–1.5	1.3	–5.2	2.0	2.4	1.4	1.4	–0.5	2.8	3.5	0.2	–4.6	–2.6	4.1	1.3	2.2	–4.3	–1.0
2,375	–2.2	–0.5	–0.1	–0.4	–1.4	0.8	–4.9	2.5	2.5	1.7	1.3	–4.1	–2.5	3.7	3.5	–2.2	0.4	2.2	4.6	–2.5	–4.6	0.2
2,400	–2.3	–0.7	–0.2	–0.2	–1.2	0.0	–3.9	2.8	2.2	1.7	0.9	–3.7	0.0	2.3	1.0	1.2	0.2	1.9	–0.7	0.7	–1.5	–1.5
2,425	–2.3	–1.2	–0.2	–0.1	–0.9	–1.0	–2.6	2.8	1.5	1.8	0.5	–0.2	2.2	5.8	1.6	1.1	–4.1	4.4	0.7	2.7	–9.2	–4.4
2,450	–2.4	–1.4	–0.3	–0.1	–0.6	–2.0	–1.3	2.6	1.4	2.0	–0.7	–2.7	1.0	3.6	–0.9	3.0	0.2	5.8	4.8	–4.7	–0.4	0.9
2,475	–2.3	–1.7	–0.4	0.1	–0.4	–3.1	–0.7	2.1	1.8	1.9	–1.6	–7.2	2.8	1.9	–0.4	–0.8	2.7	0.7	–1.8	4.7	–8.1	1.3
2,500	–2.2	–1.9	–0.5	0.1	–0.2	–4.1	–0.6	1.8	2.5	1.7	–2.2	–1.2	4.0	0.2	–8.2	–0.6	0.2	–0.6	0.5	1.4	–4.0	–2.8

TABLE A.4.—NUMERICAL VALUES FOR NORTHEAST UPPER TRIHEDRAL TRAVERSE

r, mm	Frequency, Hz																					
	160	200	250	315	400	500	630	800	1,000	1,250	1,600	2,000	2,500	3,150	4,000	5,000	6,300	8,000	10,000	12,500	16,000	20,000
500	0.8	1.1	–0.6	–0.2	0.7	0.3	0.3	–1.2	1.9	–0.3	0.1	0.3	1.5	–0.1	1.1	1.0	–1.2	–0.3	–0.7	–0.5	1.7	0.3
525	1.0	1.0	–0.6	–0.2	0.6	0.1	0.0	–1.5	1.6	–0.5	0.3	0.8	1.4	–0.6	0.6	1.1	–1.2	0.5	0.6	0.1	0.3	0.4
550	0.9	1.1	–0.6	–0.1	0.5	0.0	–0.4	–1.7	0.6	–0.7	0.0	0.9	1.6	–0.3	2.1	–0.1	0.4	0.2	0.1	0.3	–2.1	–0.8
575	0.9	1.0	–0.8	–0.1	0.4	–0.2	–0.6	–2.0	–0.2	–0.4	0.1	0.3	1.0	–0.2	1.2	–0.1	0.5	0.3	–1.0	0.4	1.7	–0.3
600	0.9	1.0	–0.8	–0.1	0.5	–0.4	–0.6	–2.4	–0.6	–0.3	0.6	0.2	0.9	–1.0	–0.3	–0.7	1.0	0.7	–1.2	–0.7	2.3	0.6
625	1.1	1.0	–0.8	0.2	0.4	–0.5	–0.5	–2.7	–0.7	–0.1	1.0	0.6	0.6	–2.8	2.0	–2.1	0.8	0.8	–0.6	1.5	3.1	2.4
650	1.1	1.0	–0.9	0.2	0.5	–0.7	–0.4	–2.8	–0.5	0.1	0.9	1.1	1.1	–1.1	2.6	–1.2	3.6	1.4	–1.6	0.4	1.7	1.2
675	1.4	0.8	–0.9	0.4	0.5	–0.9	0.1	–2.5	–0.1	–0.2	0.1	0.6	0.7	–0.3	0.9	–0.7	1.7	1.3	–1.6	1.3	0.2	0.6
700	1.2	0.8	–1.0	0.7	0.5	–1.1	0.4	–1.8	0.5	–0.9	–0.7	1.0	0.7	–0.5	1.4	1.5	1.2	–0.1	0.2	0.9	0.9	0.5
725	1.3	0.9	–0.8	0.7	0.7	–1.2	1.1	–1.1	0.7	–1.4	–1.0	0.7	1.5	–0.7	0.9	3.0	–1.9	0.4	1.3	0.0	2.1	1.9
750	1.1	0.6	–0.7	0.7	0.8	–1.2	1.5	–0.1	0.7	–1.5	–0.5	0.4	2.6	–1.2	–1.2	0.7	1.3	–2.0	1.2	0.7	2.0	1.0
775	1.3	0.7	–0.5	0.7	0.9	–1.1	2.0	0.6	0.6	–0.6	–0.1	0.2	2.4	1.8	–3.5	0.8	–2.1	0.0	–0.7	–0.6	–0.3	–0.2
800	1.1	0.6	–0.5	0.8	1.0	–1.0	2.4	1.2	0.3	0.3	–0.1	0.4	–0.5	1.9	–2.9	2.4	–1.2	0.6	0.9	0.7	–4.2	–0.2
825	1.2	0.6	–0.3	0.8	1.3	–0.7	2.5	1.5	–0.1	1.0	–0.4	–0.1	0.2	1.3	–3.4	0.1	–3.7	–0.7	1.6	1.1	–1.3	0.4
850	1.3	0.6	0.0	0.6	1.3	–0.6	2.6	1.6	0.1	1.3	–0.2	–0.3	2.4	1.4	–3.3	1.1	–0.9	1.1	–1.8	1.1	0.6	1.0
875	1.1	0.7	0.1	0.4	1.4	–0.5	2.4	1.2	0.1	0.5	0.2	–0.1	1.1	1.5	–0.1	1.8	–0.6	–1.4	–0.4	1.6	2.1	1.0
900	1.2	0.8	0.3	0.2	1.4	–0.4	2.0	0.9	0.2	–0.4	0.0	0.8	0.5	1.8	–1.6	–2.2	0.0	0.8	1.8	–0.9	2.8	2.2
925	1.1	0.8	0.6	0.0	1.4	–0.2	1.6	0.4	0.4	–1.0	–1.0	0.6	2.6	0.8	–1.3	1.7	1.2	–2.3	1.6	–1.8	2.7	1.7
950	1.1	1.0	0.8	–0.1	1.3	–0.1	1.1	0.1	0.5	–0.8	–1.1	–0.6	2.2	0.4	–1.5	–0.9	–0.7	0.7	1.4	–2.6	1.8	3.0
975	1.0	0.9	1.0	–0.3	1.2	0.0	0.5	0.1	0.2	–0.1	–0.5	–0.9	1.4	1.8	0.6	–1.1	1.5	–1.6	2.0	–1.1	3.2	2.6
1,000	1.0	1.0	1.2	–0.6	1.1	0.0	–0.1	0.0	–0.4	0.4	0.4	0.3	1.6	–0.1	–0.8	–0.4	–1.1	–0.7	–0.7	1.4	2.9	2.1
1,025	1.0	1.1	1.3	–0.7	0.8	0.2	–0.3	0.1	–1.4	0.9	0.1	0.4	0.9	0.5	2.3	–1.4	–0.1	–3.4	0.7	1.4	3.9	1.3
1,050	0.8	1.2	1.6	–0.9	0.6	0.2	–0.2	0.5	–2.2	0.7	–1.2	0.0	0.1	0.5	2.4	–2.0	2.1	1.5	1.2	–0.3	2.6	2.2
1,075	0.5	1.3	1.7	–1.0	0.0	0.2	0.0	1.1	–2.4	0.2	–1.4	1.1	1.5	–1.7	1.2	–0.3	0.2	–0.4	–0.8	–0.8	2.2	1.4
1,100	0.5	1.4	1.9	–1.2	–0.3	0.3	0.1	1.5	–1.3	–0.1	0.2	1.8	2.4	–0.7	1.5	0.2	0.2	–2.0	0.3	0.0	0.8	2.0
1,125	0.6	1.5	2.1	–1.1	–0.8	0.6	0.4	1.9	0.4	–0.1	1.0	1.1	1.6	–2.3	1.0	0.1	0.1	–0.1	1.5	1.0	0.1	–0.2
1,150	0.4	1.6	2.2	–1.1	–1.3	0.6	0.7	2.2	1.5	0.2	1.5	–1.4	–1.0	–0.3	0.7	–3.4	–1.2	1.6	0.1	0.7	2.1	0.8
1,175	0.2	1.7	2.3	–1.0	–1.9	0.7	0.8	2.3	2.1	0.5	1.3	–3.7	–4.8	2.9	1.4	0.2	0.0	2.7	1.7	–0.2	1.9	2.7

TABLE A.4.—NUMERICAL VALUES FOR NORTHEAST UPPER TRIHEDRAL TRAVERSE

r, mm	Frequency, Hz																					
	160	200	250	315	400	500	630	800	1,000	1,250	1,600	2,000	2,500	3,150	4,000	5,000	6,300	8,000	10,000	12,500	16,000	20,000
1,200	–0.1	1.7	2.3	–0.7	–2.2	0.8	0.6	2.4	2.3	0.5	0.6	–1.8	–1.6	–0.3	2.7	0.0	–5.0	–0.4	1.8	0.3	2.8	0.9
1,225	–0.4	1.9	2.1	–0.4	–2.4	1.1	0.3	1.9	1.9	0.4	–0.2	0.5	1.4	–1.8	2.4	–1.8	1.1	–0.4	2.2	1.9	1.9	0.1
1,250	–0.3	1.8	2.1	–0.1	–2.5	1.1	–0.2	1.3	0.8	0.7	–0.6	1.4	2.4	–0.1	–0.9	1.4	–2.0	1.8	–0.8	1.8	0.6	–0.3
1,275	–0.3	1.9	2.1	0.3	–2.5	1.4	–0.8	0.5	–0.3	1.2	–1.1	–0.3	1.5	–0.8	–1.6	0.7	–0.4	–2.0	–1.8	1.8	–2.0	1.9
1,300	–0.5	2.0	2.0	0.5	–2.3	1.4	–1.6	–0.5	–1.0	1.3	–1.3	–0.2	1.0	1.0	2.9	–1.4	1.2	2.0	1.2	2.1	0.5	3.2
1,325	–0.7	2.0	1.9	0.9	–2.0	1.4	–2.4	–1.5	–0.6	0.6	–1.0	–0.1	–2.3	0.2	1.4	–1.7	0.3	–3.9	–2.1	–0.4	–2.5	1.8
1,350	–0.9	2.1	1.8	1.3	–2.0	1.4	–2.9	–1.9	–0.1	0.1	0.3	0.3	–2.0	0.6	–1.1	0.7	0.6	1.2	2.6	–0.4	–0.3	1.8
1,375	–1.2	2.0	1.7	1.5	–1.6	1.4	–2.8	–1.9	0.7	–0.7	0.7	–0.9	0.3	1.0	–2.0	–1.2	0.3	–3.9	–2.4	0.1	–4.9	1.0
1,400	–1.2	1.9	1.5	1.8	–1.3	1.5	–2.3	–0.7	1.1	–1.1	0.7	–2.8	0.8	0.9	2.9	0.9	–4.5	0.8	2.4	2.4	–0.8	–0.7
1,425	–1.2	1.9	1.1	1.9	–1.2	1.5	–1.3	0.3	1.2	–0.7	0.1	–1.2	–0.1	–0.4	–0.4	1.4	2.9	1.7	2.5	2.3	–3.5	2.4
1,450	–1.5	1.7	0.9	1.8	–1.0	1.3	–0.7	1.2	0.4	–0.3	0.6	0.0	0.8	1.1	0.9	0.1	1.9	0.5	2.9	3.3	–3.1	0.5
1,475	–1.4	1.5	0.6	2.1	–0.9	0.9	–0.2	1.7	–0.3	0.5	0.1	–0.8	0.2	–1.5	–1.9	–1.6	–2.6	3.5	2.6	3.9	–2.0	1.5
1,500	–1.7	1.5	0.2	2.3	–0.9	0.5	0.4	2.0	–1.6	0.7	–1.3	–0.1	–0.4	–2.4	–2.2	1.5	–1.0	–1.0	–1.8	0.5	0.7	1.2
1,525	–1.8	1.3	–0.3	2.1	–0.9	0.0	0.7	1.5	–2.0	–0.1	–2.8	2.2	–0.9	–2.7	1.1	0.7	–1.2	–0.9	0.3	0.9	–2.0	–0.5
1,550	–1.6	1.3	–0.4	1.9	–0.8	–0.5	0.6	1.3	–1.5	–0.6	–1.8	3.3	–2.4	–0.8	–3.8	0.0	–2.4	–0.7	–2.3	0.7	–1.9	0.9
1,575	–1.8	1.1	–0.9	2.2	–0.5	–0.8	0.8	0.6	–0.5	–1.2	–1.3	1.1	–2.6	0.3	–2.3	–4.1	0.0	2.0	1.3	–5.6	–1.2	1.5
1,600	–1.5	0.8	–1.0	2.3	–0.4	–1.0	0.4	0.1	0.1	–1.3	–2.5	–3.4	0.0	–0.3	–3.1	0.1	0.6	2.5	–2.7	2.2	–1.8	2.2
1,625	–1.5	0.7	–1.6	2.2	–0.1	–1.3	0.9	–0.1	–0.3	–0.9	–3.9	–2.2	–0.4	–0.4	0.7	1.3	0.0	–1.2	–0.3	2.4	–1.7	2.2
1,650	–1.7	0.4	–1.9	2.1	0.3	–1.3	0.5	0.0	–0.2	–0.1	–2.4	0.0	–0.8	–3.6	1.2	2.8	–1.4	–2.5	2.4	2.2	0.6	3.8
1,675	–1.6	0.1	–2.2	2.0	0.6	–1.3	0.7	0.6	–0.8	0.9	–0.2	–0.1	0.3	–1.3	1.3	–6.7	–2.3	–1.3	2.4	1.9	0.4	0.0
1,700	–1.4	–0.1	–2.5	1.9	0.9	–0.8	0.7	0.9	–1.4	1.6	1.3	–1.3	–0.1	–0.5	–0.9	–2.3	1.9	–3.4	2.5	1.7	2.0	–1.3
1,725	–1.4	–0.3	–2.4	1.7	1.4	–0.6	0.8	0.8	–0.9	1.9	1.7	–1.3	–2.7	0.7	–3.0	1.9	1.4	0.3	1.4	2.2	0.7	1.2
1,750	–1.1	–0.7	–2.4	1.6	1.9	–0.4	0.5	0.2	–0.8	1.7	1.6	–0.2	–2.4	–0.2	–1.4	3.2	0.8	–0.4	–0.9	–1.9	–1.0	4.3
1,775	–1.1	–0.9	–2.3	1.5	2.2	–0.2	0.4	–0.3	–0.1	1.3	1.5	–0.1	–0.3	0.3	1.8	–2.7	4.7	–0.9	2.7	–2.1	–2.7	5.3
1,800	–0.9	–1.1	–2.1	1.6	2.5	–0.1	0.3	–1.2	0.7	0.3	1.8	–1.6	0.1	–0.2	1.8	3.1	2.0	1.6	2.4	0.3	–0.2	2.9
1,825	–0.9	–1.5	–1.8	1.5	2.8	0.1	0.4	–2.1	1.0	–0.7	2.4	–2.5	–1.4	–1.0	0.4	0.3	4.0	2.1	1.3	–5.2	1.6	2.1
1,850	–0.8	–1.7	–1.7	1.7	3.0	0.2	0.2	–2.7	1.2	–1.0	1.6	–1.4	–2.4	–0.4	–1.0	4.3	–0.7	3.1	1.5	3.3	–1.2	3.1
1,875	–0.7	–2.0	–1.2	1.7	3.3	0.4	–0.3	–2.3	0.7	–1.4	1.0	–0.6	0.1	0.7	–0.7	1.9	0.6	1.6	–7.1	–2.2	0.6	2.9

TABLE A.4.—NUMERICAL VALUES FOR NORTHEAST UPPER TRIHEDRAL TRAVERSE

r, mm	Frequency, Hz																				
	160	200	250	315	400	500	630	800	1,000	1,250	1,600	2,000	2,500	3,150	4,000	5,000	6,300	8,000	10,000	12,500	16,000	20,000
1,900	–0.4	–2.5	–0.8	1.6	3.2	0.3	–1.4	–1.4	–0.1	–1.3	0.5	–2.1	1.2	0.5	1.1	1.0	–1.4	–3.8	2.0	4.2	4.5	2.4
1,925	–0.3	–2.5	–0.3	1.6	3.2	0.2	–2.6	–0.1	–1.0	–1.6	–0.7	–1.2	–1.6	1.3	–2.0	3.3	–0.2	1.9	–1.0	1.6	0.2	4.6
1,950	–0.2	–2.7	–0.4	1.4	3.1	–0.2	–3.9	0.6	–2.4	–2.1	–1.6	0.9	–3.7	1.2	–0.1	5.1	2.0	0.3	2.2	1.1	2.3	0.9
1,975	–0.1	–2.5	–0.1	1.5	2.9	–0.2	–5.4	1.1	–3.6	–2.2	–0.7	1.9	–2.4	0.6	–3.0	3.7	–4.8	–1.9	2.0	–3.8	–0.6	2.7
2,000	–0.1	–2.7	0.1	1.2	2.5	–0.6	–7.8	1.1	–4.0	–1.0	1.1	0.3	–0.9	2.4	–1.0	–1.0	–6.2	2.3	2.0	2.7	–1.8	2.6
2,025	0.2	–2.4	0.3	1.2	2.5	–0.5	–10.3	1.2	–4.0	0.1	2.1	0.9	–0.7	0.7	1.7	3.3	0.9	1.1	4.2	0.7	–0.3	1.2
2,050	0.3	–2.4	0.5	1.0	2.1	–0.3	–9.9	0.8	–3.1	0.8	2.4	2.6	–1.8	–1.3	2.2	3.2	1.7	–1.9	1.0	–0.1	1.0	2.0
2,075	0.2	–2.1	0.6	0.8	1.8	0.0	–7.2	0.5	–2.2	0.6	1.5	2.7	–3.2	2.2	1.4	3.9	1.4	–0.4	3.9	–5.7	–0.9	2.9
2,100	0.5	–2.0	0.7	0.7	1.7	0.3	–4.3	0.3	–1.9	–0.3	0.5	1.5	–1.6	1.1	–3.5	1.9	1.4	–0.8	1.3	–0.4	3.8	3.6
2,125	0.6	–2.0	0.8	0.3	1.5	0.4	–1.8	0.2	–2.3	–1.2	–0.4	–0.6	–0.7	–1.2	–3.2	–0.8	0.2	–1.1	2.0	1.0	3.9	2.6
2,150	0.7	–1.7	0.9	0.2	1.3	0.8	0.4	0.0	–2.5	–1.1	–0.5	–1.1	–5.1	1.8	–4.8	2.2	3.7	–0.6	–0.4	2.1	2.1	0.5
2,175	0.7	–1.4	0.7	–0.1	1.2	1.1	1.4	0.0	–2.6	0.3	–0.1	0.3	–5.7	–1.5	–1.6	1.4	1.7	0.6	–2.4	–2.0	4.7	–1.3
2,200	0.7	–1.2	0.5	–0.5	1.2	1.4	2.2	0.2	–2.9	1.2	–0.2	0.7	–2.1	–0.7	–0.8	2.3	4.2	0.0	1.6	2.0	–0.3	3.7
2,225	1.1	–1.0	0.5	–1.0	1.3	1.3	2.6	–0.3	–3.1	0.8	–0.3	0.0	–2.2	–2.7	0.2	1.7	2.1	–2.1	2.4	–4.7	–3.1	3.2
2,250	0.8	–0.8	0.5	–1.2	1.4	1.4	3.1	–1.0	–2.8	0.1	–0.4	0.5	–2.0	–3.2	–0.2	1.7	3.2	1.1	–3.3	2.7	1.8	4.5
2,275	0.8	–0.6	0.4	–1.9	1.7	1.2	3.1	–2.1	–2.3	–0.8	–0.9	2.2	–0.4	0.2	–2.6	1.2	4.8	–0.2	0.7	–0.7	1.6	4.5
2,300	0.9	–0.6	0.1	–2.2	1.9	1.1	3.1	–3.2	–1.3	–1.0	–1.0	2.8	0.1	–1.6	–3.5	–1.0	2.3	0.1	–0.9	3.0	3.3	4.4
2,325	0.9	–0.3	0.0	–2.6	2.2	0.7	3.1	–4.5	–0.9	–1.2	0.0	1.9	–0.5	–0.7	–2.9	0.0	1.3	1.6	–2.5	–0.5	0.3	–0.6
2,350	0.9	–0.1	–0.1	–3.0	2.0	0.3	2.4	–4.8	–1.2	–2.0	1.3	1.1	0.6	–2.1	–4.9	–1.4	1.8	3.5	3.4	–5.0	2.9	–1.6
2,375	0.9	0.2	–0.5	–3.3	2.2	0.0	1.9	–3.9	–2.9	–3.0	1.1	2.2	0.8	–2.6	–0.8	–0.2	4.0	0.4	2.0	0.1	0.5	2.0
2,400	0.8	0.2	–0.5	–3.6	2.3	–0.6	1.7	–2.4	–5.0	–4.1	0.1	3.5	–0.8	0.6	–1.9	3.0	4.0	–0.9	–0.6	–1.7	5.1	0.6
2,425	0.9	0.2	–0.7	–4.1	2.2	–0.9	1.5	–1.0	–7.8	–4.1	–0.4	2.8	–2.2	–2.7	1.4	0.7	–1.2	–2.4	2.7	–0.7	–2.1	3.0
2,450	0.8	0.3	–0.8	–4.2	2.2	–0.9	2.0	0.5	–7.5	–2.2	–0.5	1.2	–1.0	–2.2	0.7	1.1	–0.8	1.3	4.0	–2.7	1.6	4.8
2,475	0.7	0.3	–0.9	–4.4	2.2	–0.9	2.8	1.6	–4.5	–0.4	–0.1	–1.6	–1.4	2.6	–1.8	–0.3	3.4	2.8	–0.7	2.6	0.2	1.6
2,500	0.4	0.3	–1.0	–4.5	2.0	–0.6	3.3	2.2	–2.6	0.0	–0.3	0.8	–2.5	–2.3	–1.7	2.9	0.6	–1.6	1.2	2.3	1.7	2.6
2,525	0.2	0.3	–0.7	–4.5	1.7	0.1	5.2	2.8	–3.8	–0.6												
2,550	0.3	0.2	–0.7	–4.4	1.7	0.1	5.3	2.6	–3.9	–0.7												
2,575	0.4	0.5	–0.7	–4.6	1.4	0.5	4.9	2.8	–4.6	–1.2												

TABLE A.4.—NUMERICAL VALUES FOR NORTHEAST UPPER TRIHEDRAL TRAVERSE

r, mm	Frequency, Hz																				
	160	200	250	315	400	500	630	800	1,000	1,250	1,600	2,000	2,500	3,150	4,000	5,000	6,300	8,000	10,000	12,500	16,000	20,000
2,600	0.4	0.2	–0.7	–4.9	1.2	0.6	4.6	2.2	–8.0	–0.8												
2,625	0.0	0.0	–0.3	–4.8	1.1	0.7	4.8	0.8	–7.2	–0.2												
2,650	0.1	–0.1	–0.2	–5.0	1.2	0.9	4.0	–0.2	–4.3	–0.1												
2,675	–0.3	–0.1	–0.2	–4.9	1.3	0.8	3.3	–2.0	–0.6	–0.8												
2,700	–0.5	–0.4	0.1	–5.0	1.5	0.5	2.3	–3.8	1.3	–2.7												
2,725	–0.5	–0.5	0.3	–4.8	1.6	0.0	1.4	–3.7	2.6	–3.7												
2,750	–0.7	–0.7	0.4	–4.8	1.9	–0.5	1.0	–1.7	3.0	–2.2												
2,775	–0.9	–0.9	0.8	–4.9	2.0	–1.2	0.9	0.5	2.0	0.3												
2,800	–1.3	–1.2	0.8	–4.8	2.1	–2.0	1.6	2.3	–0.2	2.5												
2,825	–1.3	–1.5	0.9	–5.0	2.1	–2.9	2.6	3.6	–4.8	3.1												
2,850	–1.5	–1.8	1.0	–4.7	2.2	–3.9	3.5	4.4	–8.0	2.1												
2,875	–1.6	–2.0	1.0	–4.8	2.2	–4.6	4.4	4.6	–4.0	0.4												
2,900	–2.2	–2.3	1.1	–4.6	2.4	–5.3	4.9	4.6	–0.1	–3.5												
2,925	–2.1	–2.7	1.2	–4.4	2.1	–5.4	5.5	4.2	2.6	–8.1												
2,950	–2.3	–2.7	1.3	–4.1	1.8	–5.4	5.7	3.2	3.9	–3.2												
2,975	–2.4	–3.1	1.1	–4.1	1.6	–4.6	5.7	1.8	4.0	0.6												
3,000	–2.8	–3.0	1.1	–3.7	1.2	–3.7	5.5	0.3	3.9	1.1												

TABLE A.5.—NUMERICAL VALUES FOR NORTHWEST UPPER TRIHEDRAL TRAVERSE

	Frequency, Hz																					
r, mm	160	200	250	315	400	500	630	800	1,000	1,250	r, mm	1,600	2,000	2,500	3,150	4,000	5,000	6,300	8,000	10,000	12,500	16,000	20,000
500	–0.8	1.2	–1.6	0.4	–1.8	–0.7	0.1	–0.6	1.7	–0.5	500	–0.4	0.1	–1.2	–0.6	0.9	0.6	0.3	–0.9	0.5	0.2	0.5	0.0
550	–0.7	1.3	–1.8	0.4	–1.9	–0.4	–0.4	–0.7	1.3	–0.9	525	–0.1	0.5	–0.3	0.6	–0.9	–0.6	1.0	–0.3	–0.3	–0.4	0.2	–0.1
600	–0.6	1.2	–1.9	0.5	–1.8	–0.3	–0.4	–0.8	0.7	–0.7	550	0.1	0.0	0.5	0.3	0.1	–0.1	–1.2	0.0	–0.2	0.2	–0.7	0.0
650	–0.6	1.2	–1.9	0.4	–1.8	–0.5	–0.8	–0.4	0.4	0.3	575	0.3	–0.7	1.1	–0.3	–0.2	0.1	0.0	1.2	0.3	0.5	2.3	0.6
700	–0.4	1.2	–1.9	0.5	–1.4	–0.7	–0.7	0.2	0.1	0.5	600	0.3	–1.5	0.8	0.6	–0.3	0.3	–0.6	1.0	0.6	1.2	2.5	0.5
750	–0.2	1.2	–1.6	0.5	–1.2	–1.2	–0.8	0.7	–0.5	–0.2	625	0.1	–2.0	0.1	1.8	1.1	0.5	–0.7	–1.9	–0.3	1.5	3.0	0.8
800	–0.1	1.0	–1.6	0.3	–1.0	–1.7	–0.5	0.9	–1.2	0.3	650	0.9	–1.3	0.0	1.5	2.0	0.2	–0.2	1.3	1.5	1.1	2.6	0.5
850	0.0	1.0	–1.3	0.2	–0.7	–2.0	0.2	0.9	–1.1	0.4	675	1.5	–1.2	–0.3	–0.3	1.3	–0.4	0.3	1.1	1.0	0.1	3.4	1.0
900	0.3	0.9	–0.8	0.0	–0.5	–1.7	1.0	0.9	–0.4	–0.3	700	1.5	–0.8	–0.8	0.3	1.1	0.6	0.5	1.1	0.1	1.5	0.6	0.6
950	0.5	0.7	–0.4	–0.2	–0.3	–1.0	1.7	1.0	0.1	–0.2	725	1.4	0.1	–1.0	–0.3	0.9	0.3	–1.0	–0.6	1.4	0.9	1.2	0.0
1,000	0.3	0.5	0.2	–0.6	0.0	0.0	1.8	1.5	–0.5	–0.2	750	0.8	0.7	–1.6	–0.5	0.1	–0.2	0.4	–1.2	1.2	0.2	0.9	–1.0
1,050	0.6	0.5	0.6	–1.0	–0.3	0.8	1.7	1.6	–1.3	–0.4	775	0.3	0.6	–1.7	0.3	0.2	1.2	1.0	1.2	–0.9	3.3	2.4	1.4
1,100	0.6	0.5	0.9	–1.5	–0.4	1.3	0.7	1.0	–1.4	–0.1	800	0.0	0.3	–1.0	–0.3	0.2	1.1	0.1	–0.2	0.7	–1.0	1.5	1.0
1,150	0.5	0.5	1.2	–1.7	–0.9	1.9	–0.7	–0.2	0.1	–0.3	825	–0.2	0.3	0.1	–0.6	–0.3	–1.6	0.8	–0.5	–0.8	–1.5	1.7	1.0
1,200	0.5	0.6	1.4	–2.1	–1.4	2.1	–1.2	–1.7	1.2	–0.8	850	–0.3	0.6	0.4	1.0	0.2	–0.1	–1.1	2.0	1.3	0.2	3.9	0.2
1,250	0.7	0.6	1.7	–2.2	–1.7	2.2	–0.6	–2.5	1.5	–0.2	875	–0.1	0.7	–0.2	2.0	0.1	1.4	–0.6	–0.8	1.6	–0.6	2.2	1.2
1,300	0.5	0.7	1.6	–2.2	–1.9	2.2	0.2	–1.7	1.2	0.1	900	–0.3	0.0	–0.8	2.1	0.5	0.8	1.5	3.2	0.1	1.0	3.5	2.1
1,350	0.3	0.7	1.6	–2.3	–1.8	2.0	0.4	–0.3	0.9	0.6	925	–0.5	–0.7	–0.1	2.4	0.2	0.4	0.5	2.5	2.0	0.8	3.9	2.0
1,400	0.3	0.9	1.6	–2.2	–1.6	1.8	0.3	0.8	0.6	0.4	950	–1.1	–0.8	–0.2	2.2	1.3	–0.2	2.3	0.5	0.1	–0.3	3.3	–0.4
1,450	0.3	0.9	1.6	–2.0	–1.2	1.3	0.2	1.1	0.9	–0.1	975	–1.6	–0.3	–1.6	1.7	2.5	0.1	–1.3	–1.6	–1.3	1.1	4.0	1.2
1,500	–0.1	1.1	1.2	–2.1	–0.7	1.0	–0.4	0.8	0.2	–0.4	1,000	–1.5	–0.4	–2.1	0.8	0.6	0.1	0.6	2.5	3.0	0.4	1.9	0.8
1,550	–0.2	1.1	1.0	–1.6	–0.4	0.7	–0.1	0.2	–1.5	–0.4	1,025	–0.9	–1.8	–0.6	0.5	–0.5	2.6	2.0	0.4	0.6	–0.7	0.6	0.7
1,600	–0.3	1.0	0.8	–1.4	–0.2	0.6	0.1	0.2	–2.4	–0.1	1,050	–0.7	–1.0	0.3	0.3	–1.7	1.1	–0.8	2.1	0.5	2.6	1.9	0.5
1,650	–0.4	0.9	0.5	–1.0	0.1	0.3	0.9	0.8	–1.0	0.0	1,075	–1.0	–0.1	–0.4	0.2	1.1	–0.2	0.0	–1.9	0.4	1.3	0.0	1.7
1,700	–0.5	0.7	0.5	–0.4	0.2	0.1	1.1	1.4	0.4	–0.7	1,100	–0.9	0.6	–1.8	0.6	2.5	–0.7	1.2	1.2	–0.7	–0.5	–1.9	–0.4
1,750	–1.2	0.5	0.2	0.4	0.4	0.2	1.3	1.5	0.4	–1.4	1,125	–0.4	1.0	–1.3	1.5	1.5	0.0	–0.2	–2.4	3.3	1.7	–0.4	0.0
1,800	–0.7	0.3	0.2	1.0	0.6	0.4	1.0	1.1	0.1	–0.7	1,150	0.1	1.1	0.0	0.4	0.8	–2.1	1.3	1.5	–0.7	2.3	–4.1	1.6
1,850	–0.9	0.0	0.2	1.6	0.8	0.7	0.8	0.4	0.4	–0.4	1,175	0.0	1.7	–0.3	1.1	1.6	–1.0	–1.5	2.5	1.7	0.6	–1.6	1.1

TABLE A.5.—NUMERICAL VALUES FOR NORTHWEST UPPER TRIHEDRAL TRAVERSE

	Frequency, Hz																					
r, mm	160	200	250	315	400	500	630	800	1,000	1,250	r, mm	1,600	2,000	2,500	3,150	4,000	5,000	6,300	8,000	10,000	12,500	16,000	20,000
1,900	–1.0	–0.4	0.4	2.1	0.8	0.8	0.2	0.2	0.6	–0.4	1,200	–0.5	1.7	–1.0	1.5	2.9	3.1	–3.8	1.7	0.1	–0.9	–2.3	1.6
1,950	–0.9	–0.7	0.5	2.4	1.0	0.8	–0.9	0.6	0.2	–1.3	1,225	–0.4	1.7	–1.4	1.5	1.5	1.8	0.3	–0.3	2.5	1.4	–0.5	1.8
2,000	–1.0	–1.2	0.5	2.6	1.3	0.6	–2.2	1.1	0.3	–2.1	1,250	0.5	1.4	–1.7	1.8	0.7	0.5	0.9	–4.7	1.8	0.6	0.9	0.3
2,050	–0.8	–1.5	0.3	2.7	1.4	0.2	–3.2	0.4	1.5	–0.5	1,275	1.1	0.4	–2.5	0.0	–2.1	–0.3	1.4	1.0	0.0	–1.4	–1.0	1.7
2,100	–0.6	–1.9	0.4	2.7	1.3	–0.6	–3.0	–0.2	2.6	0.9	1,300	0.7	–0.2	–2.4	0.5	0.0	1.8	–0.4	–0.6	1.5	1.3	1.3	0.5
2,150	–0.5	–2.2	0.1	2.4	1.5	–1.5	–2.3	–1.6	2.4	0.6	1,325	–0.4	–1.0	–1.1	–1.5	1.1	0.5	–0.6	1.9	–0.2	3.1	–2.2	–0.3
2,200	–0.5	–2.5	0.1	1.8	1.7	–2.4	–1.1	–2.0	1.2	1.8	1,350	–0.8	–1.9	–1.3	–2.0	–0.2	–0.5	–0.1	0.0	2.1	0.2	–3.7	0.5
2,250	–0.3	–2.5	–0.3	1.3	2.1	–2.6	–0.1	–1.1	0.4	1.8	1,375	–0.2	–1.6	–2.3	0.3	0.5	0.0	–0.8	–2.1	2.3	3.0	2.2	0.4
2,300	–0.1	–2.6	–0.7	0.7	2.5	–2.1	1.1	–1.3	0.5	–0.2	1,400	0.6	–1.2	–3.6	1.0	0.8	0.1	–1.1	–0.5	–1.4	–0.6	2.5	1.7
2,350	–0.1	–2.6	–0.8	0.3	2.8	–1.6	1.7	–2.1	0.9	0.8	1,425	0.9	–2.1	–2.9	0.9	2.8	1.4	–0.2	0.5	0.2	1.1	0.9	–2.2
2,400	0.0	–2.6	–1.1	–0.3	3.2	–0.8	1.7	–2.3	0.7	2.6	1,450	1.0	–3.6	–1.6	0.7	2.0	–3.1	3.4	2.3	3.9	1.1	2.3	0.6
2,450	0.1	–2.4	–1.3	–0.5	3.6	–0.4	1.1	0.2	0.4	2.6	1,475	0.3	–3.1	–1.3	0.7	0.8	–0.9	3.6	1.2	1.6	–9.1	0.7	0.8
2,500	0.0	–2.3	–1.1	–0.6	3.8	–0.3	0.3	2.3	–0.2	2.2	1,500	0.0	–1.3	–1.6	–2.0	0.6	–0.3	–1.9	–3.2	–0.3	3.1	3.5	4.0
2,550	0.3	–2.0	–0.8	–0.7	3.8	–0.5	–0.6	3.4	–0.6	1.4	1,525	0.5	–1.3	–0.4	–2.3	–2.1	1.7	2.4	0.1	–1.7	1.3	2.1	2.2
2,600	0.2	–1.8	–0.7	–0.7	3.6	–1.0	–0.3	3.5	–0.6	–0.4	1,550	1.2	–3.2	–0.4	0.8	0.0	–1.2	0.2	–0.5	–1.4	0.5	3.7	1.4
2,650	0.2	–1.4	–0.6	–0.5	3.2	–1.2	0.4	2.8	0.8	0.5	1,575	1.1	–3.5	–1.2	1.5	1.2	–0.5	1.3	–0.8	3.9	1.4	3.2	3.2
2,700	0.1	–0.8	–0.2	–0.5	2.5	–1.5	1.5	1.7	3.1	0.2	1,600	–0.3	–2.8	–1.1	–2.0	1.0	0.9	–1.2	1.0	1.8	1.4	4.1	2.2
2,750	0.0	–0.6	–0.5	–0.8	2.0	–1.2	0.3	2.3	3.2	0.7	1,625	–0.7	–2.2	0.7	2.4	–0.2	–1.2	3.4	–1.9	0.7	1.9	2.5	0.8
2,800	0.0	–0.2	–0.3	–0.8	1.4	–0.6	0.9	1.5	3.0	1.8	1,650	0.3	–1.1	2.5	4.2	–0.8	–2.4	1.0	1.5	–6.7	–0.7	2.7	–0.7
2,850	0.0	0.3	–0.4	–0.9	0.8	–0.1	2.4	0.0	2.6	1.1	1,675	0.9	0.9	2.8	3.5	–0.4	–9.8	–1.7	0.9	1.0	–1.0	2.1	0.3
2,900	0.1	0.7	–0.9	–1.2	0.8	0.2	4.0	–0.8	2.9	0.9	1,700	–0.1	0.8	1.7	3.0	1.8	–2.1	–0.2	–4.6	3.3	–3.4	2.5	1.0
2,950	–0.2	1.1	–1.4	–1.3	1.0	0.5	5.0	–0.3	2.5	2.8	1,725	–0.3	0.8	–0.1	1.5	2.2	–0.8	1.0	–2.4	–0.6	3.7	3.5	0.6
3,000	0.0	1.4	–2.0	–1.6	1.6	0.4	5.1	0.5	1.5	3.0	1,750	0.2	0.1	0.3	2.3	1.2	0.9	2.1	2.3	1.9	–1.0	1.8	1.5
											1,775	1.2	–0.2	2.1	2.4	0.4	2.1	0.9	–2.3	–1.8	1.7	–0.3	2.4
											1,800	1.7	0.4	3.3	3.6	0.4	–0.1	0.3	0.6	3.0	–3.1	4.1	0.9
											1,825	0.6	0.7	3.6	2.5	–0.3	1.7	0.8	1.3	0.6	2.5	1.0	–2.0
											1,850	–0.5	0.2	2.8	1.2	2.0	–0.8	0.3	–4.2	1.1	1.8	2.0	0.9
											1,875	–0.9	1.4	0.8	0.7	1.6	1.3	–0.2	–3.6	1.0	0.0	3.8	2.4

TABLE A.5.—NUMERICAL VALUES FOR NORTHWEST UPPER TRIHEDRAL TRAVERSE

r, mm	Frequency, Hz																						
	160	200	250	315	400	500	630	800	1,000	1,250	r, mm	1,600	2,000	2,500	3,150	4,000	5,000	6,300	8,000	10,000	12,500	16,000	20,000
											1,900	0.1	1.3	–0.5	–2.2	–1.4	–2.3	1.1	–1.6	–2.5	–2.9	2.2	2.5
											1,925	–0.6	0.5	–1.0	0.5	–0.2	–3.2	1.8	–1.2	4.4	2.7	0.5	–0.7
											1,950	–2.1	–0.2	–1.5	0.0	–2.3	–1.1	0.3	–2.2	0.7	–0.4	4.2	0.6
											1,975	–3.4	–0.6	–2.5	0.6	–2.7	1.2	–2.3	–0.3	0.7	3.3	2.5	3.4
											2,000	–2.4	0.1	–2.0	0.6	1.4	3.9	1.2	–0.2	1.2	–0.3	–1.8	1.4
											2,025	–0.4	–0.6	0.1	1.9	2.8	1.7	–0.3	–1.5	–2.0	2.2	5.2	–3.0
											2,050	0.2	–1.3	1.0	3.1	3.8	1.5	–0.1	0.1	1.4	0.2	1.7	1.6
											2,075	0.0	–1.5	–0.6	1.7	4.7	0.1	–2.0	–0.8	1.0	1.9	2.6	2.5
											2,100	–1.0	–1.8	–2.5	–0.2	1.4	–2.2	0.6	–3.5	–0.9	1.1	0.3	0.5
											2,125	–2.0	–3.5	–0.8	–0.7	1.4	–0.5	0.1	–0.5	2.8	0.4	2.4	–0.2
											2,150	–1.2	–4.5	–0.2	1.9	–0.7	–0.4	3.5	–0.6	4.1	1.4	–1.6	1.8
											2,175	–0.4	–3.8	0.7	0.5	–2.1	–1.4	2.6	–0.6	0.9	–3.4	1.1	1.0
											2,200	0.2	–3.5	1.8	1.6	–1.5	–3.9	1.6	–0.2	0.5	2.1	0.5	0.2
											2,225	–0.1	–3.0	1.8	–0.3	0.9	–2.9	0.9	0.9	0.7	1.1	–4.6	2.0
											2,250	0.6	–2.0	1.6	2.2	0.1	–1.4	2.5	3.1	–1.5	0.1	2.6	–0.4
											2,275	0.8	–0.7	1.4	3.0	–2.0	1.6	1.8	0.9	0.7	0.3	0.6	1.5
											2,300	1.3	0.1	1.9	1.7	0.8	–0.7	–0.6	–6.2	4.7	–2.4	–3.1	–0.1
											2,325	1.0	0.2	2.6	1.8	0.4	–3.4	–7.6	–3.8	–0.1	3.0	–1.1	0.4
											2,350	0.4	0.9	2.7	1.6	–2.1	0.8	0.1	1.9	–3.7	1.9	–3.3	2.5
											2,375	1.1	1.3	1.9	1.2	0.6	–0.9	1.1	1.7	1.6	3.9	–0.9	–0.6
											2,400	1.7	1.0	1.9	–1.2	2.4	–0.9	4.1	–1.8	2.4	3.6	–4.6	–2.0
											2,425	2.1	0.9	1.8	–0.3	0.5	–0.2	1.6	1.8	–2.2	–3.3	1.7	2.1
											2,450	2.1	1.7	1.8	1.3	1.1	3.9	–1.5	0.3	2.6	3.4	–4.1	–4.2
											2,475	1.9	1.7	–0.2	1.2	4.2	2.2	–1.6	1.6	3.2	3.6	–0.1	2.7
											2,500	2.1	1.8	–3.0	1.1	1.6	–1.6	–0.1	–3.2	–1.1	2.6	–8.3	–2.5
											2,525	1.0	1.1	–2.9	3.1	2.2	–1.5	3.6	–4.5	0.8	2.7	–0.4	3.5
											2,550	1.4	0.6	–1.6	3.1	0.4	–2.2	2.2	1.6	4.8	1.1	–5.7	–0.6
											2,575	1.2	–0.8	–1.8	1.0	2.6	–1.1	0.5	1.6	–0.4	1.7	3.4	–2.5

TABLE A.5.—NUMERICAL VALUES FOR NORTHWEST UPPER TRIHEDRAL TRAVERSE

r, mm	Frequency, Hz																					
	160	200	250	315	400	500	630	800	1,000	1,250	r, mm	1,600	2,000	2,500	3,150	4,000	5,000	6,300	8,000	10,000	12,500	16,000	20,000
											2,600	0.2	–2.5	–3.2	0.4	1.7	1.7	–3.6	1.6	–3.6	4.3	–0.8	4.4
											2,625	–1.6	–2.6	–3.2	0.2	2.2	–0.8	–1.2	–1.7	–0.1	2.5	–4.4	–3.1
											2,650	–1.9	–2.4	–1.8	2.2	3.1	–0.6	1.0	–5.0	3.4	–1.7	–4.1	–0.5
											2,675	–1.2	–2.9	–0.2	1.9	3.0	1.0	4.9	1.2	1.1	4.1	–4.2	1.9
											2,700	–0.6	–2.3	0.7	1.7	1.5	–4.6	2.9	–1.7	0.9	0.2	–1.9	2.5
											2,725	–1.9	–1.3	1.5	1.1	–1.1	0.4	1.2	–3.5	3.3	–3.4	2.0	–1.3
											2,750	–2.1	–0.1	2.2	1.1	0.1	1.7	–2.5	–3.7	4.4	2.5	2.4	–3.1
											2,775	–1.0	–0.6	0.7	2.1	–1.8	1.5	0.2	1.2	–3.3	2.4	–1.8	3.2
											2,800	0.6	–1.7	–1.0	0.0	–0.2	1.1	2.5	2.5	–3.7	–3.9	–2.6	4.7
											2,825	1.2	–2.7	–0.8	1.7	–1.1	0.2	3.2	0.1	4.0	3.6	–6.5	2.4
											2,850	0.8	–3.8	–1.4	–1.4	0.3	0.8	3.9	–0.9	1.1	4.1	–0.5	–2.1
											2,875	0.5	–4.6	–0.3	–1.8	–0.4	0.4	1.2	–0.8	–2.1	–0.5	4.4	3.4
											2,900	1.6	–6.3	1.5	–1.9	0.0	–1.3	–2.6	2.1	3.6	4.4	–4.3	–0.3
											2,925	2.1	–7.4	–0.5	0.1	0.5	–3.4	–2.1	–0.2	4.4	2.0	–0.6	1.2
											2,950	1.7	–5.3	–4.4	0.7	1.5	–5.2	–0.8	–0.7	3.4	–0.6	–2.1	–1.4
											2,975	0.9	–3.1	–1.1	–1.2	2.1	–3.1	1.4	–1.9	–0.1	4.0	–0.3	2.6
											3,000	0.6	–1.4	0.9	1.6	2.2	–1.1	–0.5	–0.1	–3.7	4.6	1.7	3.2

Appendix B

Figure B.1.—NASA traversing microphone probe (foreground) with ETS-Lindgren dodecagon tweeter speaker on tripod.

Figure B.2.—ETS-Lindgren traverse installed in location where NASA traversing microphone is typically placed. ETS-Lindgren dodecagon tweeter speaker on tripod.

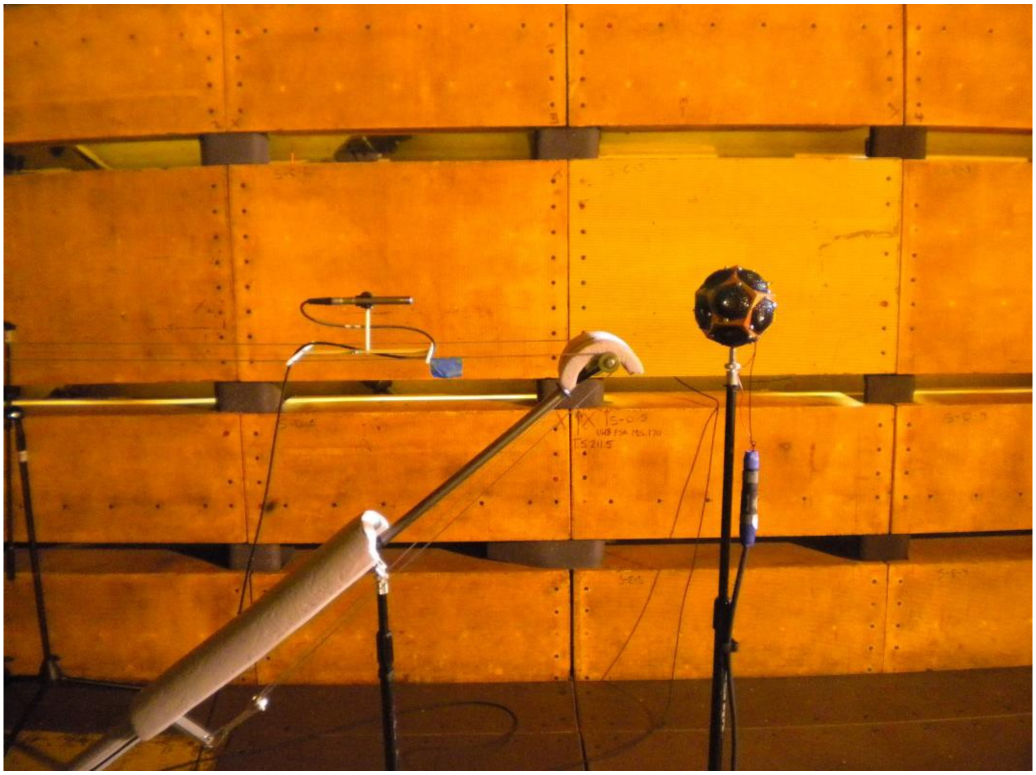

Figure B.3.—ETS-Lindgren traverse and dodecagon tweeter speaker
in the east (downstream) horizontal traverse configuration.

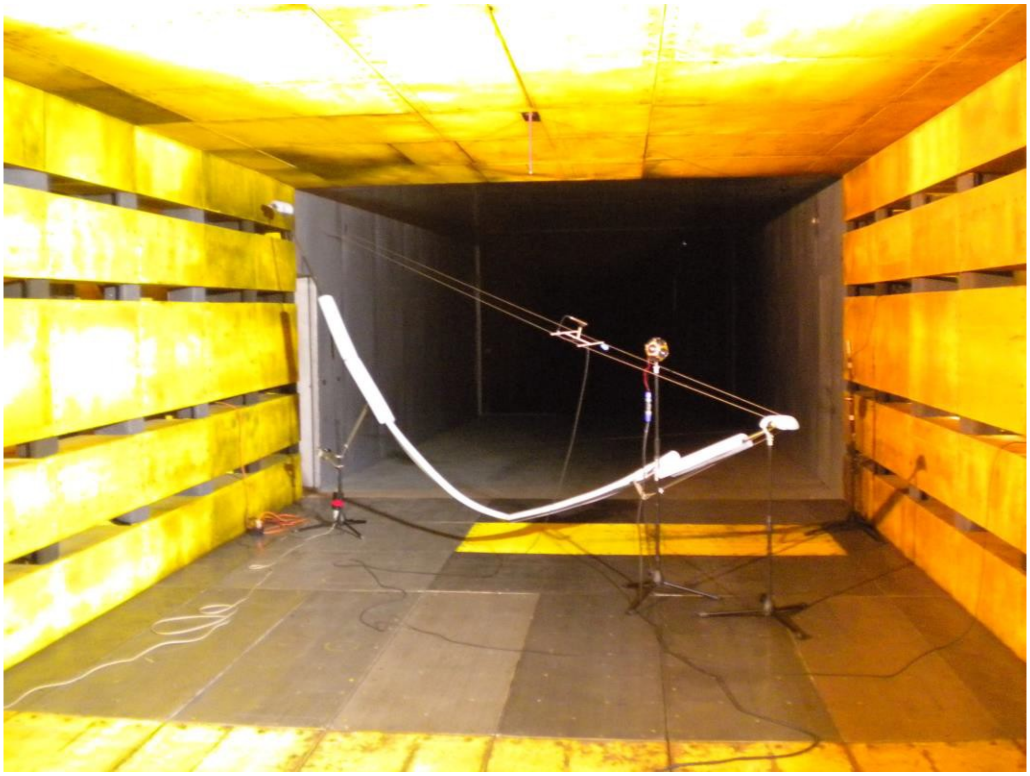

Figure B.4.—ETS-Lindgren traverse and dodecagon tweeter speaker
in the northeast upper trihedral traverse configuration.

Figure B.5.—ETS-Lindgren traverse and high-frequency point source speaker in the northwest upper trihedral traverse configuration.